

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1246. (Vol. XXIV. No. 46.)

NOVEMBER 10, 1932

Weekly, Price 6d.
Post Free, 7½d. Abroad, 8d

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.
Telephone: (2 lines), Holborn 3211 and 1884.
Telegrams: Truditur, Westcent, London.

Subscription Rates, Post Free.

UNITED KINGDOM		UNITED STATES		OTHER COUNTRIES	
	s. d.		\$		s. d.
3 Months ...	8 3	3 Months ...	\$2.20	3 Months ...	8 9
6 " ...	16 6	6 " ...	\$4.40	6 " ...	17 6
12 " ...	33 0	12 " ...	\$8.75	12 " ...	35 0

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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1932.

- Nov. 10. "Airscrew Design." Lecture by Mr. D. L. Hollis Williams, B.Sc., A.F.R.Ae.S., before R.Ae.S.
- Nov. 10. American Embassy Luncheon to Mr. E. P. Warner, at Hyde Park Hotel.
- Nov. 11. Lancashire Ae.C. Armistice Dinner.
- Nov. 12. Reading Aero Club Dance.
- Nov. 13. Maidstone Ae.C. Scavenger Hunt.
- Nov. 18-Dec. 4. Paris Aero Show.
- Nov. 25. Norfolk and Norwich Ae.C. Annual Ball.
- Nov. 26. Comrades of the R.A.F. Re-union Dinner, Harrods'.
- Dec. 1. "The Behaviour of Fluids in Turbulent Motion." Lecture by Mr. A. Fage, A.R.C.Sc., F.R.Ae.S., before R.Ae.S.
- Dec. 2. Hampshire Ae.C. Annual Dinner and Dance.
- Dec. 5. Hull Flying Club Annual Ball.
- Dec. 8. "Air Survey." Lecture by Lieut. J. S. A. Salt, R.E., before R.Ae.S.
- Dec. 10. Maidstone Ae.C. Annual Dance.
- Dec. 14. "Air Power and Disarmament." Lecture by Group Capt. J. T. Babington before R.U.S.I.
- Dec. 14. London Ae.C. Annual Dance at Park Lane Hotel.
- Dec. 15. "Airship Development Abroad." Lecture by Sqdn.-Ldr. R. S. Booth, before R.Ae.S.
- Dec. 15. "Lessons of the D.O.X." Lecture by Dr. C. Dornier, before R.Ae.S.
- Dec. 23. Liverpool and Dis. Ae.C. Annual Dance at Mostyn House School.

1933.

- Jan. 6. Bristol and Wessex Ae.C. Dance at Grand Spa Hotel.
- Feb. 1. "Recent Operation in Kurdistan." Lecture by Group Capt. A. G. R. Garrod before R.U.S.I.
- Feb. 2. "Operation of Aircraft Over Tropical Routes." Lecture by A. Plesman, before R.Ae.S.

EDITORIAL COMMENT



QUALITATIVE disarmament is the fashionable phrase of the moment in Geneva circles. It is the euphonious description given to the British plan for restricting armaments, as against the French plan which is called quantitative disarmament. In plain English this means that the French would curtail numbers of men, ships, tanks, guns, aircraft, etc., while the British would curtail certain forms of weapons which are considered especially suitable for aggression or are specially inhumane.

The diplomatic correspondent of the *Daily Telegraph*, in reporting, on November 2, a meeting of the Cabinet Committee on Disarmament, stated that some British Ministers would favour not merely the suppression of heavy bombing aircraft, but of military aircraft altogether. The correspondent added that this view was vigorously opposed by the Service departments. It will most certainly be also vigorously opposed by all sensibly-minded citizens who desire to sleep safely in their beds. We admit that, from the point of view of defence, Great Britain has lost more than any other nation through the discovery of the art of flying—though the British Empire stands to gain more than anyone else can do from commercial air transport. Aeroplanes and airships have, in a military sense, abolished our insularity. We are no longer completely protected by the narrow seas and the Royal Navy. Still, we cannot put back the hands of the clock, and we must accept the fact that aircraft can fly across the narrow seas. It is now our duty to ourselves to see that when aircraft do fly across the sea they shall not be able to endanger our national security.

Just as it would be to our military advantage if all aircraft could be abolished, so it would also benefit us more than anybody else if bombing aircraft could be entirely suppressed. Where we join issue with the unspecified British Ministers mentioned above is in our absolute disbelief that bombing aircraft will ever disappear from war. We may be asked if we have no faith at all in the solemn words of nations; do we regard all international

promises as so many "scraps of paper"? Our answer is that we are not such cynics by any means. Germany set a very bad example in 1914, but we do not believe that that example has vitiated all national honour. Sensibly framed rules of war have in the past been for the most part honourably observed by belligerents even in the Great War. In the future, too, they will be generally observed, provided that the condition "sensibly framed" is fulfilled. On that one point hangs everything.

In the days of duels there were stringent and sometimes fantastic codes of honour, and in modern prize-fighting the rules are also very stringent. Such artificial rules cannot be applied to warfare. If the Disarmament Conference of the League of Nations were to ordain, and the High Contracting Parties were to append their signatures to the Ordinance, that soldiers when fighting with bayonets must not thrust below the belt, do they imagine for one moment that such a rule would be observed? Of course they do not imagine any such thing; and equally, of course, such an ordinance would not be worth the paper on which it was written. It would be an attempt to deprive belligerents of their legitimate rights. The last phrase may astonish our pacifists, but it is a perfectly reasonable expression. A belligerent undoubtedly has certain rights, and agreements which attempt to deprive him of those rights will never be observed. They are so certainly ineffective that they might almost be described as bad international law. They will be as unanimously disregarded by all belligerents from the first as was the 20 miles an hour speed limit for motor cars while it was in force. It was condemned by the common sense of the community, and unreasonable international laws of war will likewise be condemned.

Bombing is on all fours with the example of the bayonet fighter. The bombing aeroplane is in effect only a means of extending the range of the guns. Imagine an ammunition dump or a munitions factory at the rear of an army just out of the range of the enemy's artillery. If the enemy can raise a bomber aeroplane which will destroy that dump or factory, will any General hesitate to use it? And will he be unjustified in using it? Its use is so obviously within the rights of a belligerent—rights which have been recognised through all the ages—that no enactment of any body can possibly deprive him of those rights. The enactment would merely stultify its authors.

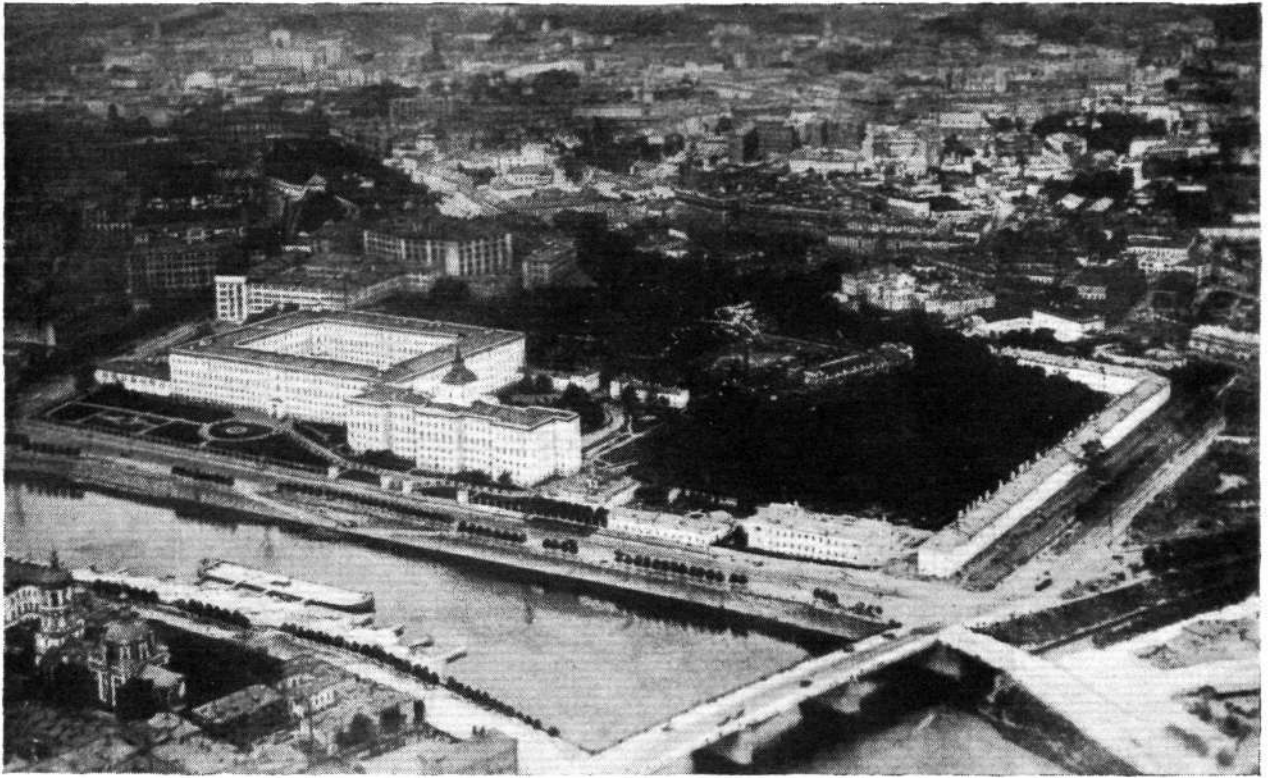
We do not wish any of our readers to imagine that we believe all international agreements can rightly or lightly be disregarded in time of war. There must be international rules governing war, and so long as they are reasonable they will be observed by all belligerents who retain any self-respect or any common sense. Absolutely unrestricted warfare has been contemplated by no civilised nation, and has been practised by none. Prisoners of war, for example, have their well-known rights, and cases in which those rights have not been respected have been exceptional. As yet, no nation has ever attempted to spread disease germs among the enemy's army or civil population. The worst which has been done—and it is quite bad enough—has been the use of asphyxiating gas. In the Great War that gas was only used on one front. Its use was begun by the Germans at Ypres on April 22, 1915, and we believe that all the better-minded Germans now regret that action. The Allies, of course were obliged to retaliate. But there was no gas used by either side on the

Turkish front or the Bulgarian front; and in the Afghan War of 1919 the British again refrained from using gas, although to have done so would have saved the lives of many soldiers. Here there is a fair chance for the exponents of qualitative disarmament to do good work. No one can claim seriously that the use of gas is a reasonable right of a belligerent, and Geneva may legitimately forbid its use, in full expectation that the rule will be kept by all signatories. All chemical warfare can be treated in the same way. It should not be a difficult matter to classify bombs which are designed to destroy a civil population rather than to wreck military objectives, and these, too, should be forbidden.

Let us suppose, however, that the infatuates have their own way at Geneva and forbid the possession of all bomber aircraft, or of aircraft above some fixed size. What would be the result? No single nation would believe that the rule would be kept for one moment in war, and, therefore, everyone would have to prepare to evade the prohibition as best he could. Every attempt which ingenuity could devise would be made to design civil aeroplanes which could be converted into bombers as easily as possible. It has been suggested that a system of international inspection would defeat such attempts. The idea seems to us fantastic. No aircraft designers would submit their private designs to the view of international inspectors, which would mean foreign inspectors. Again Geneva would be attempting the impossible, and inviting defeat of its well-meaning schemes. In the second place, the cause of air transport would suffer, for the passenger machines and freight machines would not be designed with a single eye towards economic efficiency. The hybrid machines which would be the result would not be very good civil aeroplanes and would not be very good bombers. Perhaps air transport would benefit by some artificial "doping," for if the aircraft trade were to be kept in existence, orders would have to be found for it somehow by the Government; and probably subsidies would be paid for opening all sorts of air lines for which there was no real economic demand. We cannot imagine any one nation being more altruistic than the rest in taking these and similar steps; but the net result would be a thoroughly unhealthy condition of the air transport of the world.

For Great Britain the one thing which must always be vitally necessary is to maintain her air defence organisation. We can no more believe that other nations which may in the future be our opponents will not use bombers than we can believe that we should ourselves refrain from their use. It follows, if we wish to preserve the lives of our citizens and all that makes those lives worth living, that we must on no consideration whatever permit the efficiency of our Fighting Area, of our searchlights and anti-aircraft guns, of our Corps of Observers, to fall below the very highest pitch of efficiency. On these the life of London and of our other great industrial towns depends, and we must never be so mad as to leave those centres without the best possible defence which we can provide. Politicians, who may try to deprive us of our shield, will some day or other have to pay a very heavy reckoning.

That there is a real danger of that happening should be clear to all sceptics from the facts and figures put forward by Capt. Guest and Wing-Com. James last week in a letter to the Press, which is reproduced elsewhere in this issue of FLIGHT.



MOSCOW : Palace of Labour and the Yauza Bridge.

A Flight in Russia

A first hand account of a journey by air from Europe to Samarkand and back via Moscow and Astrakhan. Mr. Grierson tells his story from the private pilot's point of view and adds greatly to our knowledge of the flying conditions in the U.S.S.R. The aircraft he used being a Moth (Gipsy I) named "Rouge et Noir."

By JOHN GRIERSON

IF you look at a Map of the World you will see that the Union of Soviet Socialist Republics, comprising Russia in Europe and Russia in Asia (Siberia), stretches from the Arctic Ocean in the north to Bokhara in the south, from Poland in the west to the Pacific in the East; in fact, it covers one-sixth of the whole earth! Thus, although my 8,800-mile outing to Astrakhan and Samarkand was as long a journey as from England to Australia, I can only claim to have visited one little corner of this enormous land.

They told me that the flying visa would take six weeks to get from Moscow, but as the authorities remained silent, at the end of two months I set off up the Baltic meaning to collect the visa at Tallinn and enter Russia at Leningrad. But alas, five days' frantic cabling from Tallinn only brought the reply of "visa not granted," so sorrowfully I flew all the way back to London. However, after a further three weeks the visa was suddenly granted with permission only to fly direct to Moscow.

The second start was not a great success, for on the first day I ran through a Channel fog, only to be forced back later by clouds, and I had to land at Essen.

Next day I did manage to make Stettin, and then get within thirty miles of Minsk. The nearest landing ground on the map was Molodeczno, in Poland, so I had no other course but to fumble my way northwards in the mist and rain until I struck the railway which led to it. Immediately I had landed I was given every assistance by the Polish military, and not allowed to pay for anything. The sky was blue and a strong cross wind was blowing as I started the thirty-six-mile hop to Minsk.

The U.S.S.R. Reached

My feelings were mixed as I circled preparatory to the first contact with this extraordinary land of which I had heard so much—so many lies, so little truth.

Immediately on landing I was met by a swarm of uniformed men who led me up beside two civil cabin monoplane of a type exhibited at Olympia several years ago. Nobody seemed to want to do anything saving, to

my horror, tether "Rouge et Noir" down with screw pickets! It would be hopeless to argue, so I resigned myself to the inevitable and filled in the time working on the engine. Seeing how dirty the fuselage was, the chief ordered his men to wash it down, and they did this most thoroughly lying on their backs. Here, indeed, was Russian hospitality expressed in a courtesy I had never received anywhere else, not even in Turkey. My labour finished, I was next taken to the buffet, where, in the course of a meal, I was cross-examined for several hours by the chief Foreign Officer of the O.G.P.U., who had brought an interpreter with him. Before this I had scented something in the air, and now it was disclosed that I had landed in a fortified area, that the Deruluft route by Veliki Luki is the only way one may enter Russia, and that I was as likely as not to be shot for my pains. However, I presume, because it was a special holiday for the Young Comrades' League, they decided to let me off. Then hundreds of questions followed, such as, how fast could my machine go, could a "Moth" carry bombs, and so on until, my voice grown hoarse, they at last filled up my machine. Finally, before taking off, I expressed thanks and farewells in my best German to the aerodrome Chief, the Chief Foreign Officer, and the President of the Osoaviakhim (Society for the Promotion of Chemical and Aerial Warfare). Now, with half a gale behind, I was soon at four thousand feet, making a ground speed of 130 miles per hour towards Moscow.

Huge Aerodrome at Moscow

After three and a quarter hours of ideal flying conditions the Capital appeared, and on its main aerodrome, which is the greatest in all the world, I beheld a strange sight. There, along the western boundary, was a collection of all sorts of civil aircraft, drawn up in several lines as if prepared for an inspection. When I landed a Red Army soldier, who spoke good English, directed me to the end of the parade. Here a curious crowd soon formed, and I was calmly told that they would picket me down where I was, like the other aeroplanes I had seen. Against

this I violently protested, for I was probably going to stay a week or more in Moscow, and pointed out that, whereas their machines were all metal (mostly of Junkers type), mine was wooden and not suited to this kind of treatment; but when I thought I was almost beaten, I suddenly won, and hangarage was granted. On going into the Customs Office to have my attaché-case searched, I was met by Comrade Nhaidoneff, the Deputy for the Chief of the Civil Air Fleet (Aeroflot). His message was that the Chief first wished to congratulate me upon the successful conclusion of my flight, whereat I came all over blushing, thinking that at least there was someone here who appreciated the difficulties of bad weather flying. The blush, however, was not to last, for secondly he wished to know why I had landed at Minsk! I explained that I had told the Russian Consulate that I was going there, because it was on the straight-line route, and that Soyuznest (the parent company of R.O.P.) had actually arranged supplies for me at this point. My explanation availed nought, and I was ordered to report to the Chief at 10 o'clock next morning. At last my interpreter was allowed to escort me to the sumptuous car he had waiting—one of the latest Lincolns. We drove to the New Moscow Hotel, where I was provided with a bed-cum-bath-room, which would have been very nice with the addition of hot water, or even a bell that would ring. Hotels are not a strong point in the Soviet Union.

Promptly at ten o'clock my interpreter took me into the office of the Chief, one Comrade Feldman. He was a burly, sun-tanned, good-looking type of true Russian character, with politeness in everything he said. At the end of the examination I was allowed to ask anything I wanted, so I first requested permission to proceed to Astrakhan and Samarkand. This he flatly refused, so I decided to make another application through Soyuznest.

A Flight in the A.N.T.14

Secondly, I asked if I might see inside A.N.T.14, which was picketed out at the Aeroport. In reply, he not only authorised me to see all over it, but said he thought I might be allowed to go for a flight around Moscow in it.

Dismally, two days later I heard that Soyuznest had failed to get my permits. I began to realise that in Russia civil aviation of the sporting kind, such as we lead the world in, is quite unknown. They regard the aeroplane purely as a war engine, and the foreign aviator as a spy. Even to make an engine test flight from Moscow Aeroport it is necessary to report to the chief of the aero-

drome and ask for a permit to make the flight, also one to pass the sentry on to the flying ground.

At length the flight in A.N.T.14 materialised. This aircraft is a high-wing, all-metal monoplane, covered by corrugated duralumin in the Junkers style, and carrying thirty-six passengers, crew of six, and seven and a half hours' petrol, at a cruising speed of approximately 110 m.p.h. A.N.T.14 represents the Soviet's first big air liner. The power is supplied by five Russian-built geared Jupiters driving adjustable-pitch Hamilton airscrews. As the type, now in production, is intended for the trans-Siberian route, interchangeable undercarriages are available. They are of the ski and tandem-wheel types.

Comrade Nhaidoneff showed me round the machine, and I found that, as in the Do.X and the G.38, the pilot, in his comfortable cabin, from which the lowness of the nose engine allowed an excellent view, was only given flying controls (including throttles) and flying instruments. All the indicators appertaining to the engines were in the hands of the chief mechanic, whose office was on the top of the passenger compartment. Having given the aircraft the "once-over," we next sat down in the comfortable, adjustable-backed wicker chairs arranged on each side of the wide gangway. We did not all sit, however, for there were forty-seven on board, many of whom were distinguished workers. In this connection I was told that they can carry up to 65 persons when making short flights with small weight of fuel. After taxiing halfway around the aerodrome the big machine took off in the very good time of ten seconds, although the wind was not more than 15 m.p.h. The climb was excellent, and it was easy to talk without forcing the voice. Vibration, however, was somewhat pronounced. After twenty minutes' flying round we landed with a run of about 200 yards, and I felt that I had flown in a really sound aeroplane.

The Soviet Civil Aircraft

One day I went out to the Aeroport under the impression that I was going to swing my compass. This, however, was not to be, for I was firmly told it would be done by the Technician. But as this comrade was busy on another machine, "George," the chief mechanic, stepped into the breach. He announced to my surprise that he would show me around the Civil Air Fleet, which I had previously thought was secret, like most things in Russian aviation.

This was what I was shown:—

(1) The A.N.T.9, similar in many ways to A.N.T.14.



SOVIET HOUSING : New workers' homes in Usachovka (Moscow District).

Having three Russian-built Wright "Whirlwinds," and being a high-wing monoplane, it resembles the Ford. Judging by the numbers, this appears to have been one of the Soviet's most successful aircraft.

(2) Junkers 3-engined and F.13, both too well known to call for description here.

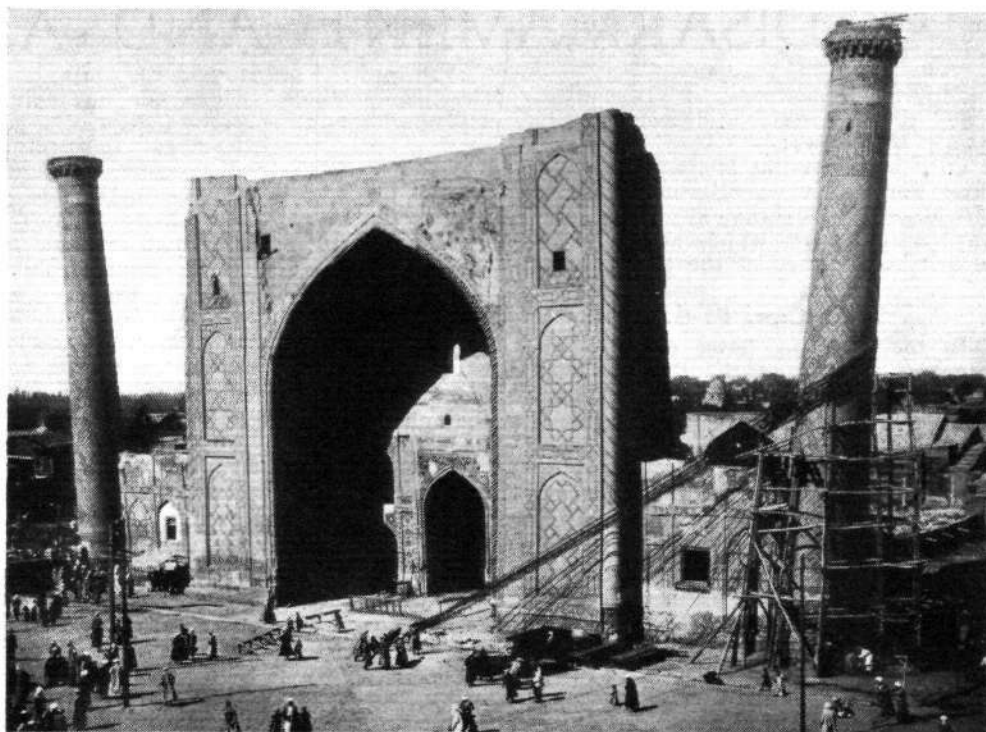
(3) A high-wing all-metal passenger monoplane, with two 600-h.p. B.M.W. engines. The covering was not corrugated. This was an early type.

(4) An old type of A.N.T. cabin machine with one Whirlwind.

(5) A military two-seater with the gunner's cockpit converted into a mail compartment. This is used on the Moscow-Leningrad high-speed postal service.

As I was going around these heavily-guarded aeroplanes, I noticed a trainer type of two-seater with 12-ft. pole and an aerial hanging underneath, continually landing and taking off. On querying this, George explained that the machine was carrying out experimental work for fog, or "blind," landings. Therefore, it is evident that the Soviet mean to carry out their own development independent of results obtained in other countries.

Lastly, I saw an aircraft in the distance the day I was leaving for England, but was in too much hurry to be able to examine this, a new type of low-wing monoplane. With a 100-h.p. radial engine, it was claimed to carry four persons and have a maximum speed of 160 km./hr. (100 m.p.h. approximately). Corrugated duralumin was evidently the covering for the fuselage. It would seem, from what I had seen, that the Russian designer considers the Junkers type of construction ideal, and when one



SAMARKAND: Old mosque, embossed with enamel-faced bricks of rarest hues. It took the Soviet Government two years to restore the pillar on the right, which is seen in process of being trued up.

realises the extremes of temperature in Russia, the universal lack of hangarage, and the marvellous reputation of Junkers aircraft, no doubt the choice is sound.

From the foregoing it will be seen that the engines are mainly American and German types built under licence, with the addition of some British-designed Jupiters. I was told, however, that in the new seventy-five-seater now under construction the first Soviet-designed and Soviet-built aircraft motors will be installed.

(To be concluded.)



THE PENALTY OF GREATNESS

MEMBERS of the Junior Aero Club were greatly honoured by the presence among them of Flt. Lt. C. Uwins on the evening of November 1. Flt. Lt. Uwins, as our readers know, is now the holder of the World's Altitude Record (F.A.I. Class C—Aeroplanes) and true to their policy of dining people who have furthered the cause of aviation by some great feat the club welcomed him in no uncertain manner. By thus being a Guest of Honour, Uwins was soaring to heights unattainable by the ordinary pilot, but despite the practice he had had of high flying so recently, he was obviously ill at ease and somewhat out of his element. No doubt the solitude of the stratosphere and the refreshment of the oxygen bottle better suited his nature than the position he found himself in that evening.

As is usual on these occasions the guest was not allowed to go his way without serious attempt to bring to the surface the latent "childishness" which always lies hidden in every man. The secretary of the club, Mr. Eric Teesdale, had for this occasion secured a primitive, but to his mind suitable, vehicle for their guest who, possibly by virtue of his superabundant grey hairs has been acclaimed the world's most ancient test pilot. This contraption, which we understand was the first publicly licensed vehicle to be fitted with a Triplex glass screen, was of the type wherein the aged ladies of Bath used to take the morning air. Uwins, however, was evidently adjudged to

have had enough fresh air, for no sooner had he taken his seat than the window and consequently all ventilation was "satisfactorily buttoned up," and then, the better to insure his suitability for piloting in any position, he was inverted. Eventually, however, he was allowed to come to the surface somewhat dishevelled, and the more spirited members, their enthusiasm now fully roused, then gave vent to their exuberant feelings by meting out similar treatment to the Chairman. It sounds silly no doubt, but everyone seemed to enjoy it, including the guest and the chairman (Mr. Gordon England).

After all, it does everyone good to be childish sometimes, and when that childishness can be underlaid with a modicum of genuine admiration such as the members of the Junior Aero Club undoubtedly felt for Flt. Lt. Uwins, then gatherings like this are to be encouraged. Col. Shelmerdine, the President of the club, was unfortunately delayed and did not arrive until fairly late. He pointed out that the heartiest congratulations were due to Flt. Lt. Uwins, particularly as the Record Flight was done just in the ordinary way of routine and not as a special attempt. He said that we ought to feel grateful to him for having gained this Record for Gt. Britain, and in conclusion he hoped that successful use would be made of the experience thus obtained, particularly for the successful conclusion of Lord Clydesdale's forthcoming flight over Mount Everest.



Costes' Famous Aeroplane

THE French Air Ministry has decided to place the aeroplane in which Costes and Lebrun crashed in Russia (when Lebrun lost his life) in the aeronautical museum in Paris. The machine is named *Nungesser et Coli*.

Fire at Venice Aerodrome

THE Rome correspondent of the *Morning Post* reports that a fire broke out on the Venice Aerodrome at the Lido on November 3 and destroyed several hangars, including five Junkers machines and other property.

DISARMAMENT AND AIRCRAFT

FORTY Members of Parliament belonging to the Parliamentary Air Committee have tabled a motion as follows:—

"That this House is entitled on a matter of such vital importance as disarmament to be consulted before His Majesty's Government's delegates at Geneva enter into any arrangements which may permanently prejudice the security and peace of the British Empire."

Capt. F. E. Guest's Views

In the following letter to *The Times*, Capt. Frederick Guest (Chairman of the Private Members' Parliamentary Air Committee) and Wing Com. James (Hon. Secretary) put forward facts and figures in support of the fight against the foolishness and danger to the British Empire of jeopardising her future supremacy in the air, which can hardly be ignored by those responsible for the protection of the British community and its interests:

"The Private Members' Air Committee of the House of Commons desire at this moment to call the attention of the British public to the true facts in regard to the way in which Great Britain has set the pace in disarmament.

Attention has not been drawn as yet to what appears to us the most striking factor of all, and that is the way in which Great Britain has set an example by unilateral disarmament in the air.

We have been looking up the records and find that in terms of first line strength—i.e., aircraft actually in commission—we were at the time of the Armistice very slightly behind our good friends the French, who had far outstripped all countries but our own. But we had already (a) a larger number of trained flying personnel, and (b) a larger total of aircraft on charge (i.e., machines in reserve as well as in commission) than any other nation, including France, while (c) production of both aircraft and engines was, thanks to careful planning and our immense manufacturing resources, advancing with unparalleled rapidity. We were, in short, taking all these factors in combination, the leading air Power of the world.

After the war, however, we proceeded to scrap this mighty instrument almost entirely and waited hopefully for other countries to follow our example. Far from doing so, even nations whose strength in the air was negligible in 1918 have steadily developed their air forces. As long ago as 1922 we were forced to prepare the Home Defence scheme which was announced in 1923 under the Bonar Law Administration, and subsequently approved by three successive Governments and three successive Parliaments. It seems to be forgotten that originally it was intended to complete this modest initial measure of expansion by 1928. Time after time the programme has been slowed down in the interests of disarmament and economy until to-day—four years after the date by which it should have been completed—we are still, according to the Government's recent White Paper on Disarmament, short by 10 units (or some 20 per cent.) of the 52 squadrons envisaged in 1923 as the very minimum required for keeping our protection in the air.

Of recent years British air policy has continued to display this same unique moderation. From information recently furnished it appears that our gross Air Estimates, Service and civil, for 1932 are some 7 per cent. lower than they were in 1925. In France, the United States and Italy, on the other hand, air expenditure has over the same period gone up by leaps and bounds. In the two former in particular the increase is between 150 and 200 per cent. The result is that in Great Britain air expenditure to-day is only some 2½ per cent. of our national Budget as a whole, while in France the corresponding figure is, roughly, 5 per cent., and in the United States and Italy about 4 per cent. We now rank fifth of the nations in terms of air power, and if civil air strength is also counted, as it must be, then our relative position is infinitely weaker.

It must not be forgotten that in our anxiety to set a good example in the matter of air armaments, we, as the

trustees for a far-flung Empire, have deliberately kept ourselves short of a method which combines economy with efficiency in both civil and military matters. Let it not be forgotten that in the Middle East and elsewhere, where we have inalienable responsibilities, the judicious use of aircraft has, in the past decade, saved millions of pounds and (what is even more important) thousands of lives—*vide* Sir Henry Dobbs's recent weighty testimony in your columns. Moreover, just as the ocean has through the centuries been a potent factor in our commercial development, so we stand to derive greater benefits from air transport than any other nation, if only we have not lost the vision and enterprise of our forbears which gave us our primacy at sea, and are alert to grasp our opportunities before it is too late."

Sir Eric Geddes' Views

The Rt. Hon. Sir Eric Geddes, Chairman of Imperial Airways, had an article in the *Daily Mail* of November 7, arguing that international control of civil flying would damage British air lines. In the course of his article he wrote:

"Civil aircraft as we have developed them are drawing farther and farther away from military aircraft in design and performance. In other countries this may not be so, but our air liners are developing strictly on commercial lines, and we give the taxpayer better value for the subsidy than does any other country in the world to-day.

If subsidies are paid on the number of machines kept in service, or the number of aeroplane miles flown, or if any subsidy is given for the number of competent pilots employed, then I say without hesitation that that civil aviation is not being developed on commercial lines. The more we develop on commercial lines, however, the less useful for military purposes becomes our fleet. The more we develop on commercial lines the smaller our fleet in comparison with the work we do. A daily service to Australia could be run with about 25 aeroplanes; 20 aeroplanes could operate and maintain a daily service to the Cape.

Imperial Airways employs only 32 pilots, which, so far as aerial warfare is concerned, is a negligible number. If anyone were crazy enough to use them as fighting machines, our air liners would be so vulnerable in wartime that one might well say that their military value was even less than the fighting value of an Atlantic liner in naval warfare. A single-seater scout would destroy the first just as a submarine would sink the latter."

Sir Eric Geddes concluded his article by giving the following interesting table:—

	Aircraft employed in regular air transport	Average pay load per aircraft	Number of pilots employed in regular air transport	Approx. weekly scheduled mileage.
France ..	269	lb. 1,380	135	109,000
Germany ..	177	1,849	160	299,000
Italy ..	77	1,836	61	60,000
Gt. Britain	32	4,858	32	35,000

The Diplomatic correspondent of the *Observer*, in the issue of November 6, inclined to the belief that the former proposals for disarmament made by the British Government are not at present being revised, and also that British opposition to all schemes for internationalising aircraft (or other armaments) is likely to continue.



The Polar Medal

It was announced in the *London Gazette* of November 4 that H.M. the King has been graciously pleased to

approve the Polar Medal in silver with clasp "Arctic. 1930-31" being granted to (among others) Flt. Lts. H. I. Cozens and N. H. D'Aeth, R.A.F.



Avro "Lynxes" of The University Air Squadron. The University Crest can be clearly seen. (FLIGHT Photo.)

Oxford Squadron's New Home

MANY years ago Socrates, a learned Greek philosopher and sage, was highly criticised, even satirized, for being too much in the air metaphorically, but nobody will have anything but admiration for a modern learned sage, the Rev. F. J. Lys, M.A., Provost of Worcester and Vice-Chancellor of Oxford University, who, on the morning of Thursday, November 3, took to the air physically, and flew from Upper Heyford to the new aerodrome at Shippon, near Abingdon, the new home of the University Air Squadron.

It is interesting to note that by this action he made history, for never before has a Vice-Chancellor of Oxford University, in his official capacity, used aerial transport.

The new aerodrome must surely be one of the pleasantest in England from a pilot's point of view, for it is large, flat, and possesses excellent approaches from all directions. The new turf looked luxuriantly green and was well brightened by a kindly sun.

At 12.20 the Air Officer Commanding-in-chief, Sir Geoffrey Salmond, arrived from Northolt in a 24 squad. Fairey III F, which looked very smart and was fitted with the new Dunlop aero wheels, piloted by Flt. Lt. Sylvester; he was met



LORD LONDONDERRY: Secretary of State for Air arriving in an Avro "Trainer." (FLIGHT Photo.)

by Air Vice-Marshal Sir J. Webb-Bowen, commanding the Wessex bombing area, Wing Com. G. W. Roberts, commanding the Abingdon R.A.F. station, and other officers. A few minutes later the Vice-Chancellor arrived in an "Atlas" machine, belonging to the University Air Squadron, and piloted by Wing Com. Park, the squadron's chief instructor. An escort was provided by a formation of five Avro "Lynxes" also belonging to the University Air Squadron. The formation being led by Sqd. Ldr. Mellersh, who had as passenger the University Registrar, Mr. Douglas Veale.

The Vice-Chancellor's machine taxied up to where the R.A.F. officers were waiting to receive him, but when Wing Com. Park switched off the engine, the Vice-Chancellor seemed loth to leave the machine, and some few minutes elapsed before he could be persuaded to climb out on to terra firma. After being welcomed by the senior officers of the Air Force, he was introduced to the Secretary of State for Air, Lord Londonderry, who had arrived a few minutes previously from Northolt in an Avro "Trainer,"

piloted by Flt. Lt. Whitfield. The party then proceeded to the Air Squadron hangar, and members of the squadron were likewise introduced, after which the Vice-Chancellor



ARRIVAL OF VICE CHANCELLOR: Rev. F. J. Lys, M.A., being assisted out of his machine by his pilot, Wing Com. Park, and the A.O.C. in C. (FLIGHT Photo.)



SIR GEOFFREY SALMOND: Beside the Fairey III F in which he flew from Northolt. (FLIGHT Photo.)

was entertained at lunch in the officers' mess.

After lunch the Vice-Chancellor, the Secretary of State for Air, and other officers for some few minutes watched flying instruction being given to members, after which the Vice-Chancellor returned to Oxford by car.

The Oxford University Air Squadron was formed on October 11, 1925, with its headquarters at Manor Road, with the object of stimulating interest of aeronautical subjects among members of the University, and to encourage a flow of candidates for commissions in the R.A.F., in the Reserve, and in the Auxiliary Air Force. The first Chief Instructor was Maj. H. R. Raikes, A.F.C., the Buffs and R.A.F. and Sub Rector of Exeter. In October, 1925, Sqd. Ldr. Weir was appointed as an instructor. In 1926 the squadron held its first annual attachment at Manston, and in October of the following year a flight was formed at the R.A.F. station, Upper Heyford, for providing flying facilities during term, instructional flying starting on December 1.

In 1928 Wing Com. Garrod replaced Wing Com. Raikes as Chief Instructor, Flt. Lt. Williamson replaced Sqd. Ldr. Weir, and Flt. Lt. Mellersh replaced Flt. Lt. Bruce.

In 1930 Flt. Lt. Guppy replaced Sqd. Ldr. Williamson, and in January, 1931, Wing Com. Garrod was replaced by Wing Com. Hill.

During this year the squadron was attached to the R.A.F. station, Manston, for its annual attachment, and after its period of training there Flt. Lt. Buckle relieved Flt. Lt. Guppy. In August, 1932, Wing Com. Hill was



THE CHURCH AND THE STATE: The Vice Chancellor and Provost of Worcester photographed with Sir Geoffrey Salmond and Lord Londonderry (FLIGHT Photo.)

relieved by Wing Com. Park, and in October Flt. Lt. Barlow took over from Flt. Lt. Buckle.

The Abingdon station will be a great deal more convenient to the University Air Squadron than Upper Heyford, it being a great deal closer to Oxford.

The squadron is at present about 70 strong, and hopes in the future not only to increase its flying time, but to enable its members to receive training in many other subjects which, up to the present, have not been taught.



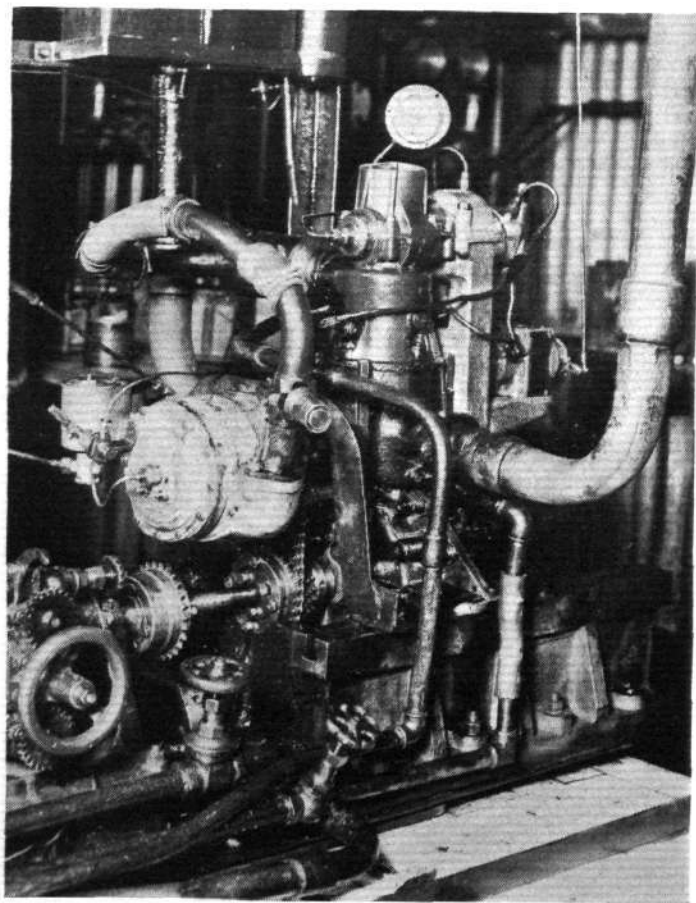
F. C. Jearum, F. W. Edwards (Jun.), J. L. Jameson and their remarkable engine. (FLIGHT Photos.)

A NEW ENGINE

MR. F. W. EDWARDS (JUN.), Mr. F. C. JEARUM and MR. J. L. JAMESON, of Wallington, have designed an engine which, if but a fraction of the designers' expectations are realised, will revolutionise transport by air and on the ground.

The experimental engine is a supercharged, two-stroke, single-cylinder unit of 411 c.c. capacity, and is claimed to develop 54.79 b.h.p. at 4,800 r.p.m.

A multi-cylinder engine is being constructed to be placed in a racing car which will attack existing records, and the inventors are working on the designs of a 12-cylinder water-cooled engine of a flat type, which could be placed in the leading edge of aeroplane wings. This latter model will be constructed of an aluminium alloy with cylinders of a nitro alloy. The designers claim that the weight of the engine will be 0.6 lb. per b.h.p., also that much friction has been eliminated by an extensive use



of needle roller bearings. Apparently the essence of the engine is a new system of supercharged induction incorporated in a cylinder of new design.

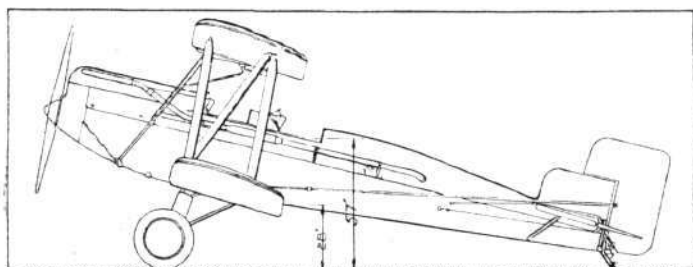
Civil Primary Training

Major Travers in the paper he read before the Royal Aeronautical Society on November 3 created a very great deal of interest with his views, particularly in his appeal for a revival of the light pusher type of aeroplane for training

SPACE does not permit of us reprinting Maj. Travers' paper in full, although it is of the utmost importance. Readers therefore who wish to learn more from Maj. Travers' experience, will do well to obtain copies of the Journal of the Royal Aeronautical Society as soon as this paper is published in full. Starting historically, as is usual, the lecturer pointed out that civil primary training should endeavour to train the whole able-bodied civil population to use the air as their lawful occasions demand. He considered that there was a vast difference between military and civil flying training, and pointed out that in the beginning of flying in this country there was no official military aviation, for the pioneers designed, financed, built, flew, crashed and repaired their own aircraft. In order to obtain a just perspective of the early training days, the lecturer divided the history of flying training into several periods. The first, which he called, "The true pioneer Era," was all groping in the dark and ended about 1910. The second period was the one during which those who had gained some rule-of-thumb knowledge imparted it to their pupils. The third period of between 1912 and 1914 saw the birth of the military schools, but these he maintained added nothing to the common fund of knowledge for many years, and that the civilian schools did all the good work up to and after the outbreak of the war. The fourth period between 1914 and 1917 was one during which the quality of flying training reached its lowest, for during this time most of the pre-war instructors had been called up and replacements followed one another so rapidly that much valuable knowledge both in preliminary training and in cross-country flying was lost. The fifth period was an entirely military one, which included the much-needed Gosport reform, but, this system being designed to train war pilots, aerobatics were considered of more importance than cross-country flying.

Post-War Civil Instruction

The sixth period, he said, was also military, and was that of the present-day Central Flying School, but almost coincident with this period there began the renewal of civil instruction at Brooklands under the late Col. G. L. P. Henderson and the five subsidised clubs, London, Bristol, Norfolk, Lancashire and Midlands. Finally, there was the seventh period now being entered upon, which he would like to describe as the Wittering sequence adapted to civil conditions. Maj. Travers pointed out that the

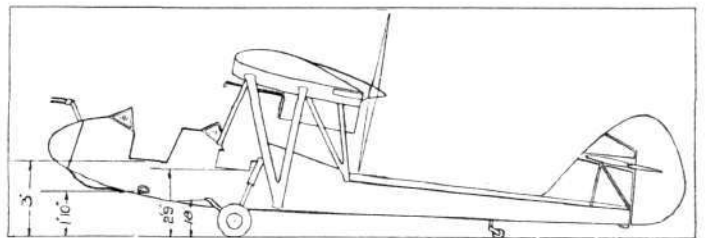


THE TRACTOR: Bad view ahead, slipstream over the cockpits, smell, oil and difficult to get into, airscrew in dangerous position.

C.F.S. sequence as taught at Wittering was undoubtedly the finest military flying training in the world, but it required considerable adaptation to enable it to be used for the varied types of civilians who paid their own money to learn to fly. More time spent on learning the separate use of the controls was advocated, as was the importance of obtaining a comfortable flying position. The standard of civil flying was said to be steadily improving, mainly due to the fact that the type of civilian instructor was becoming better and better. This instructor has nowadays to

be a psychologist and one who can readily understand the character of his pupils. Maj. Travers advocated the entire revision of civil pilots' licences, and suggested the following four categories:—

- (1) A.—Eight hours' dual under licensed instructor plus three hours' solo—for private solo flying only.
- (2) B.—A plus further dual and fifty hours' solo—for private passenger carrying or mails and goods for hire or reward. The flying test as for the present "B" at Northolt.
- (3) C.—B plus a further 150 hours' night flying and practical navigators' examination—for limited commercial flying.
- (4) D.—C plus a further 500 hours on a variety of types—for instructors and unlimited commercial flying.



THE PUSHER: Perfect view, no draughts, no oil or smell, easy to get into, airscrew up out of harm's way.

It was pointed out that the better clubs now insisted upon a local rule of their own, whereby no member was allowed to carry passengers unless they had done at least 50 hours' solo flying and a general flying test somewhat similar to that set for "B" licence candidates. This, however, was unfortunately not an Air Ministry regulation.

With regard to cross-country flying, the lecturer suggested talks on unsuitable flying days, on the four great C's of cross-country air pilotage. These he designated: Compass, Clock, Chart and Common sense. It was thoroughly recommended that those who were going to keep their own aircraft away from a competent ground engineer should themselves attend a course of aircraft maintenance. A plea was also voiced for a better state of health for both pupils and instructors, and the suggestion made that all flying schools should be provided with ponies. The paper as printed, contained a lot of very interesting matter on the costs of running a flying club and a graph showing the rate at which the costs decreased, according to the amount of flying done, was displayed upon the screen.

The Pusher Advocated

The outcome of this analysis was that a new class of light aircraft should be created somewhere between the glider and the existing machine, which would not only be cheaper to buy, but also cheaper to maintain, and therefore cheaper to operate in every way. Maj. Travers was strongly in favour of a revival of the light pusher (see FLIGHT for October 13, page 952). Firstly, he maintained that the forward view provided by this type would very largely decrease the risk of collision in the air, and to emphasise this point of view, a series of photographs and sketches were shown on the screen which demonstrated the comparative blindness of the modern tractor. The pusher would also provide, he said, freedom from oil fumes in the cockpit, draughts down the occupants' necks and altogether a very much more comfortable machine. Such a machine as he visualised, he thought, would appeal to a far greater circle of people than at present and extend the work of the flying clubs very considerably. He mentioned that the gliding clubs had already done a very great deal to this end, and that his proposed light machine

would be the next step, as it were, for their fully-trained members. He scouted entirely the idea that the engine of a pusher invariably hit one in the small of the back when the machine was involved in a crash, and in defence of his views he quoted crashes in which he himself had been involved, in machines like the F.E.2b. A pertinent question was asked with regard to this when he said: "Is it better to have 100 per cent. speed, climb and full aerobatic performance and suddenly leave this world by hitting a factory chimney or a flag pole; or is it better to have 95 per cent. speed, climb and limited aerobatics, always to be able to see where you are going, on the ground or in the air, have freedom from oil splashes, exhaust fumes, icy eddies of the slipstream, and go on flying until you are too old to leave the far side?"

THE DISCUSSION.

LT.-COL. F. C. SHELMEKDINE, in the Chair, called upon Grp. Capt. Baldwin to open the discussion. The latter considered that there was no grave difference between civil or military air training and that it was only a matter of adaptation. He expressed the opinion that hand signalling should at no time be allowed to replace the voice, as at critical moments, when a pupil was very near to panicking, nothing pulled him together more quickly than to hear the instructor down the voice pipe. He said that he was in agreement with the lecturer on the subject of revision of civilian licences and he also thought that the three hours flying required for the renewal of the existing "A" licence ought to be compulsorily spread, quarterly, over the whole year.

Sqd. Ldr. T. ENGLAND said that while the pusher may come he did not think it would do so yet and in any case there seemed little point in instructing civil pilots on it when they were, after all, a source of supply in case of war and would therefore have to be taught all over again on military machines. He thought there was a great future in ground training with some such machine as the "Hoverplane." Even officers of the Mercantile Marine require a great deal of training before they are of value to the Royal Navy so why expect pilots to be efficient military pilots. The idea that all pilots are potential pilots for the R.A.F. is completely unsound and illogical.—Ed.]

FLT. LT. JENKINS (in charge of instruction at the A.S.T. school, Hamble), said that he agreed entirely with the desirability of instruction on each control separately. He did not agree that most pupils found difficulty in mastering the rudder, but found that the action of the control column caused them more trouble. He stressed the need for adequate ground training, but pointed out that the A.S.T. instrument trainer (see FLIGHT for July 3, 1931) was not used at Hamble for flying training, but merely as an adjunct to the blind flying course. He expressed his conviction that the pusher was undoubtedly the right type of machine for training. It was easier to fly he said, very much easier to land, probably due to the excellent forward view and much more comfortable, and he felt that in the development of this type lay the future success of the flying training schools and light aeroplane clubs. He also asked that the method of trimming by loading the stick or the rudder bar with some form of spring should be dropped entirely. [We should like to endorse this last remark.—Ed.]

AIR COMM. F. E. GUEST said that the paper was, to his mind, of the greatest importance. It struck at the very foundation of all civil flying, so much so, that Major Travers had attempted an almost impossible task in getting all the material into one lecture. He asked that a further series of lectures should be arranged as arising out of this one.

MAJOR MEALING (Air Ministry) pointed out that the question of licences was not one upon which we could legislate for ourselves entirely, as it was a subject for the International Commission on Air Navigation. He also, like most other speakers, agreed that side-by-side seating was the best for training and that the pusher was most probably the ideal type of machine.

MR. LOWE WYLDE (the designer who has recently aroused great interest with his ultra light aircraft (see FLIGHT for November 3, page 1022) thought that flying training was carried out with the wrong idea entirely. He said flying clubs should not be considered as being establishments for the production of aerial chauffeurs. There was no earthly reason he thought, why people should not fly just the same as they sailed boats or drove motor cars. [The motor-car analogy, as Mr. Branson pointed out during the discussion, is entirely wrong. There may be a similarity between yachts and aircraft,

but certainly not motor cars.—Ed.] The idea that everyone who learned to fly was a potential fighting pilot was definitely wrong. The trouble at the present time was that it was too difficult to learn to fly, chiefly because aircraft had been designed with performance as the paramount quality. What was wanted was forward vision, low landing speed and ease of controllability, all of which should be placed before performance. These could be obtained with a very much cheaper machine than was at present used, and some form of light pusher he thought would be the answer. With regard to the question of pilots forming a reserve from which pilots for the R.A.F. could be drawn, he felt that if flying training were made very much easier and cheaper on the lines he suggested, the number of people who would then learn to fly would be vastly greater, and they would constitute a reserve from which it would be much easier to pick and choose than hitherto.

MR. W. O. MANNING said that he wished to take up the cudgels for designers. There was no difficulty, he maintained, in building a pusher if such were wanted. Two points came to his mind as being possibilities of trouble, one was that engine designers were in the habit of putting their exhaust valves on the forward side of the cylinders and if such engines were used as pushers this fact might cause overheating. Similarly, he thought more care would be needed to prevent caps or scarves blowing back into the propeller. There was little doubt he thought, that for maximum performance, the tractor was the better arrangement, but the pusher undoubtedly scored on the question of view.

FLT. LT. W. E. JOHNSTON said while he was in agreement with Major Travers concerning the advisability of change types, he would go even further and say that five hours intelligent solo on five types was worth 50 hours solo on one type. This brought him to the suggestion that the ideal training aircraft would include means for considerably varying its own flying characteristics. As an example, he quoted, the case of the Fairey III.F versus the D.H. 9.A upon both of which he had given instruction. The former gave far better results by virtue of the fact that it was fitted with certain arrangements whereby its gliding angle and chief characteristics could be varied at will. He stressed the fact that even the act of changing seats in a side-by-side aircraft was a stimulant to the pupil. FLT. LT. JOHNSTON asked Major Travers to enlarge in writing on his views concerning operative and optical methods of instruction and he referred to that eminent psychologist, Dr. McCurdy of Cambridge, who has commented very favourably on the soundness in principle of the methods involved. Amplifying Major Travers' statement that "we need not only cheaper aircraft but a better forward view," FLT. LT. JOHNSTON wished to deal with that as a metaphorical "forward view" by which cheaper aircraft could be obtained. He said that the obstacle to this view appeared to be expressed by the code word "FAILD", formed of the initial letters of Farnborough, A.I.D. Inspection, Legislation, Departmentalism. He expressed great respect for each of these integers, but regretted that the resultant sum undeniably constituted the chief obstacle to progress and metaphorical "forward view" of the present day. In conclusion, he voiced a plea for business control in civil aviation and to this end to let aviation develop under the interested eye of those whose livelihood was at stake rather than the disinterested and rather chilling gaze of pensionable officials. Shipping he said developed in that way, why not flying?

MR. GORDON ENGLAND (Chairman of the British Gliding Association) gave vent to a somewhat heated tirade against the military mind in civil aviation, which not only ruled the design of the machines, but also biased both the instructors and demonstration pilots. [Again we agree, military aviation has had and always will have a detrimental effect on the economical development of civil aviation.—Ed.] He deprecated Major Travers' view that great stress should be laid on the physical fitness of pilots. The man in the street he said never would be A1 as regards fitness, and there should be no bar to him flying in the ordinary way on this account. With regard to licences, he did not think that the I.C.A.N. should be allowed to dictate the requirements of pilots in this country. If they wish to fly abroad that was another matter, but there was no reason at all why there should not be licences issued on an entirely different basis for those flying in this country. He also asked for the development of the lighter, cheaper type, such as Major Travers had asked for and agreed entirely that forward view and comfort should be placed before performance.

MR. LEE MURRAY suggested that the Air Ministry should not remove their control, but should make sure that the designers were competent, and then leave them alone.

COL. SHELMEKDINE, in closing the discussion, announced that the whole subject of licences was under review by a panel which included not only representatives of the Air Ministry, but also those from the flying schools, clubs, British Aviation Insurance Co. and the G.A.P.A.N. [We seem to remember hearing the same thing before, but the result has not been striking.—Ed.]

From the Clubs

AT READING

Mr. Miles entertained the visitors to Woodley Aerodrome, Reading, on Sunday, November 6, with two aerobatic displays on his "Satyr" (Pobjoy). This machine,



A BRITISH SAILPLANE: The "Scud II" flying at the London Gliding Club's ground, Dunstable.

which has already been described in FLIGHT, is gaining great favour with those pilots who like something really handy to do aerobatics with, but which does not have the drawback of an expensive and high-powered engine. Lord Ronaldshay has now taken delivery of his "Moth" (Gipsy I) which has been through the shops, while Countess de Loos Corswarem's St. Hulbert (Walter) has also now finished its time in the shops and been put through its tests by Com. Croxford, the club's Chief Instructor. Members should not forget that the club's dance is on Saturday, November 12, and anyone who can get there early to give a hand will be much appreciated.

MAIDSTONE

The Maidstone Aero Club welcomed Mr. M. Spencer, their

new manager at their monthly "At Home" on Sunday, November 6. On Sunday, November 13, there will be a "Scavenger Hunt," tickets being 5s. to non-members and 2s. 6d. members, including dance and prizes. The start will be at 4.30 p.m. and the finish 6.30 p.m. Dancing from 7 p.m. onwards.

GATWICK

Improvements to the aerodrome and clubhouse continue, three lock-ups being almost completed and housing arranged for over a dozen cars. The aerodrome surface, as we saw during a recent visit, is still in the process of being hunterised, and shows every prospect of, when consolidated, becoming one of those billiard-table-like surfaces for which Mr. Hunter's firm is now so well known. The clubhouse, as our readers know, is one of the most attractive old timbered buildings it is possible to imagine, and the new comfortable arm chairs and settees with their blue covering will undoubtedly make the lounge one of the most comfortable possessed by any club. One of the club members, Mr. Dulling, has recently taken an appointment in Rangoon where it is understood he hopes to do a considerable amount of flying. Flt. Lt. Russell has now retired and Mr. Payne has been appointed Chief Pilot of the Redwing School of Flying and Chief Instructor to the Surrey Aero Club.

HERTS AND ESSEX AERO CLUB

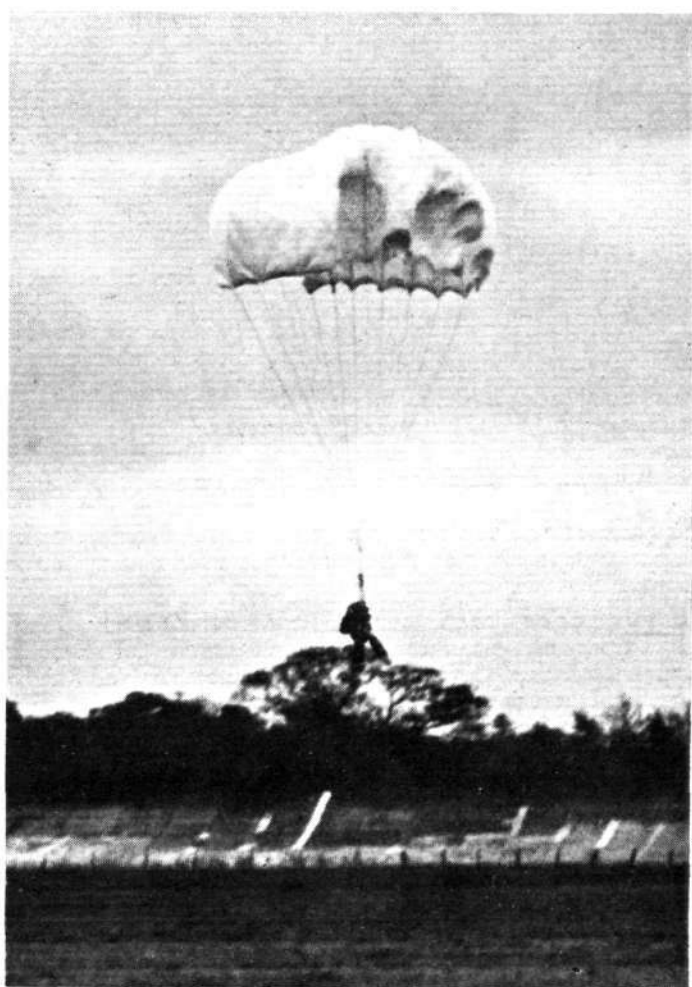
A handsome silver cup known as the "Woodside Challenge Cup" has been presented to the club by one of their members, Mr. William Sanders, the first competition for this taking the form of pin pointing a short course and finishing with a forced landing, will take place on Sunday, November 20. Competitors must fly the course in one of the club's "Moths" and the winner, who will be presented with a replica, will hold the Cup for six months. All flying members of the club may compete. Entries must be received not later than November 17. The recently formed Film Flying Club have affiliated themselves to the Herts and Essex Club and will be commencing their activities at Broxbourne shortly.

LEICESTERSHIRE

78½ hr. were flown on the club aircraft at Desford during October this year, which compares favourably with the 60½ hr. of the same month last year. On November 3 a series of fortnightly lectures was started and proved of great interest to all members. This lecture was on "Air Pilotage" and was given by Flt. Lt. G. Stringer, the club's Chief Instructor. The next lecture will be on November 17 at 7 p.m. on the subject of "Magnetism and the Compass."

BROOKLANDS

In spite of the wintry conditions, over 35 hr. were flown during the past week. New pupils include Messrs. Smith, Marshall and Opie. Mr. Mollard has completed his Northolt tests for the "B" licence and Mr. Poland, a member of the College of Aeronautical Engineering Aero Club expects to take his "A" licence shortly. The repair shops are very busy now and looking very spick and span indeed, as are also all the environs of the aerodrome, due to the fact that every scrap of burnable waste material was collected for the large bonfire which formed the chief attraction at the children's party held on Saturday, November 5. Over 2,000 children were present, representing the families of those employed, not only at Brooklands but also by the two aircraft firms, Vickers and Hawkers. The children undoubtedly enjoyed the afternoon, which included a demonstration lesson by Mr. Ruutz Rees, and a magnificent aerobatic display by Mr. "Bill" Thorn on the Avro "Cadet." This machine is, as we have pointed out on many occasions, not only extremely nice to fly but also particularly excellent on all its controls. The finished way in which Thorn did his aerobatics (at a reasonable and sensible height) at speeds lower than we have ever seen before showed that there is no lack of control at the lower end of the "Cadet's" flying range. Of course, the children could hardly be expected to appreciate it, but the grown-up members of the audience undoubtedly enjoyed watching him do such things as half-loops and rolling off the top with the machine almost standing still, yet under perfect control all the time. Mr. Brie demonstrated the "Autogiro" and Mr. George Lowdell, in his inimitable way, provided the lighter side with his crazy flying. It was a noticeable, and we feel not unpleasing



GUY! GUY! GUY! Before his traditional fiery end the "Guy" at Brooklands last Saturday was cast from an aeroplane at an altitude of only 200 ft. His G.Q. parachute saved him and was completely open before he reached the ground.

fact, that the majority of the children did not appear very concerned in the flying. Several times when machines came low across the aerodrome in front of them they did not even trouble to look at all. This can but mean that flying is now becoming a commonplace and everyday affair, and the child in his mind probably says "Oh, it's only another of those blinking aeroplanes." Once the machine arrived on the ground, however, the innate mechanical curiosity of all English children overcame them and they flocked round to examine it closely. For their benefit a guy was taken up and dropped overboard attached to one of the new Gregory Quilter parachutes. Although dropped from quite a low height the parachute opened instantly, allowing the guy to float gently to earth. Entertainment was provided by Mr. Burney who chugged out on to the aerodrome in a 1900 Benz, and after a skirmish with a rescue party of club members the guy was eventually taken across the other side of the aerodrome where in traditional fashion he was thrown into the middle of the bonfire. A fitting close to the day was provided by Brocks, Ltd., whose fireworks were greatly appreciated, and the flight of whose rockets was so excellent that we felt they ought to suit those protagonists of this form of propulsion for aircraft.

LONDON GLIDING CLUB

Despite the extremely gusty wind rising to 40 m.p.h. at times on Sunday, October 30, many soaring flights were made. The "Scud II" flew in the heavy rain for over one hour under the able pilotage of Mr. Buxton, and reached a height of over 1,000 ft. above the hill. The "Kassel II" was also flown on prolonged flights by Maj. Petre and Mr. Dewsbury, while the "Crested Wren" made an excellent flight in the hands of an *ab initio* pilot. During the day several visitors came to the club from both India and Germany and Maj. Travers came over in a "Moth" to look at the club, finding that he was able to maintain height while soaring along the hill with his engine throttled right back.



ON SAILPLANE PRINCIPLES: An interesting little single-seater which has been built in the Transvaal, S.A. With the A.B.C. "Scorpion" it cruises at 60 m.p.h. comfortably, and has a landing speed of about 30 m.p.h.

LIVERPOOL AND DISTRICT AERO CLUB

The club announces with great regret the death of their Secretary, Capt. J. Ellis. A substantial increase is recorded in the number of flying hours this year as compared with last year. Up to the end of September 1,755 had been logged compared with 1,394 for a similar period last year. Oxy-acetylene projectors have now been provided by the club, and Hooton aerodrome will henceforth be equipped for night landings. Instruction will be given at £3 per hour. The club's annual dance is to be held on December 23 through the generosity of Mr. A. M. D. Grenfell at Mostyn House School. Tickets, price 2s. 6d., can be obtained from the secretary.

AT SYWELL

The depression of the past year has caused a serious set-back to the Northamptonshire Aero Club, and this as at present constituted will be wound up shortly. During the past year the club has organised some eleven flying meetings, but despite the success of these the committee and directors have decided that they cannot continue any longer. Efforts are now being made to re-form the club, which will in future be known as "The Sywell Aero Club," a new committee, consisting of Lord Willoughby de Broke, Mr. J. Joyes, Mr. A. J. Linnell, Mr. H. Shale, Mr. E. Kew, Mr. F. Twinning and Mr. P. Hayward, having been formed for the purpose. Until further notice, inquiries and correspondence should be addressed to 53, St. Matthews Parade, Northampton.

N.F.S.

Trainers and jockeys are still continuing to realise the value of rapid transport by air, and quite a large number make a regular habit of hiring machines from Hanworth. On Saturday, October 29, Mr. F. Darling flew from Beckhampton to Tangmere and back again during the day. Cross-country flying is increasing in popularity with members, and despite the weather quite a large number took away machines. During the week-end among those who made first solo flights were Lady Nelson and Lt. Robertson, R.N., of the R.N. Flying Club. In Yorkshire the weather was a little better than it has been for some time past, and over 22 hr. were flown during the past week. A certain amount of commercial work has now come to hand, and on Saturday, October 29, one of the club machines from Yeadon was commissioned for

demonstration flights over two Leeds cinemas in connection with the flying film being shown.

BRISTOL AND WESSEX AEROPLANE CLUB

During the past week Mr. R. Roy made his first solo flight and Mr. L. R. Williams completed the tests for his "A" licence. The club has trained 13 pupils since April this year, and 11, including three who have joined during the last week, are now under instruction. It is intended to run a men's handicap squash racket competition in the Airport court and a ladies' handicap competition in addition to the matches with other clubs in the district. The club are running two dances during the winter at the Grand Spa Hotel, the first on January 6 and the second on March 24.

LONDON AEROPLANE CLUB

Mr. M. Spencer was given a good send off at the house dance last Saturday when he also received a presentation from the members. Maj. Travers, the club's Chief Instructor, delivered a lecture before the Royal Aeronautical Society during the week and showed that he was very definitely in favour of a light type of pusher aeroplane for training at flying clubs. It is to be hoped that his prayer will be answered so that flying costs may be brought down.

HAMPSHIRE AEROPLANE CLUB

As foreshadowed in our report of the Women's Engineering Society meeting at Eastleigh in FLIGHT for September 23, the Hampshire Aeroplane Club was transferred to the Southampton Municipal Airport, Atlantic Park, Eastleigh, on Friday, November 4. Correspondence should therefore in future be addressed to the club at this aerodrome. Telephone No. Eastleigh 170.

LANCASHIRE AERO CLUB

The "Scrounging" or "Scavenging" Party held on October 29 was a great success, and this was followed by a Baby Party on Saturday, November 5. It was a condition that all guests had to come dressed as infants and was followed by a dance after a bonfire and fireworks. An Armistice dinner will be held on November 11 at 7.30 p.m., tickets for which may be obtained from the secretary, price 7s. 6d. This is for men only, and evening dress with decorations will be worn.

"Airscrew Design"

TO-DAY, November 10, Mr. D. L. Hollis Williams, B.Sc., A.F.R.Ae.S., will read his paper on "Airscrew Design." The subject is one of considerable importance in the general problem of aircraft design. Mr. Williams deals with the following points in the course of his lecture:—Airscrew action; the airflow through airscrews; design theories and methods; design problems and procedure; choice of the aerofoil section; diameter and gear ratio; blade width; influence of airscrew design on aircraft performance; variable pitch airscrews and airscrew testing. The lecture, which will be illustrated, will be in the lecture hall of the Royal Society of Arts, 18, John Street, Adelphi, W.C.2, at 6.30 p.m.

A Monospar Appointment

His many friends will undoubtedly be pleased to hear that Flt. Lt. H. M. Schofield has now been appointed General Manager of General Aircraft, Ltd., at Croydon. The company's output of Monospar aircraft is steadily increasing, and it is expected that before long their production programme will be running according to schedule.

The de Havilland Aeronautical Technical School

THE annual Students' Ball is to be held at the Portland Rooms, Baker Street, on December 9 next, the reception is at 8 o'clock and dancing will commence at 8.30 till 2.30. Newman's Band has been engaged. The buffet will be run by Gunters.

Air Transport

CIVIL AIR TRAFFIC THROUGH GREECE

GREECE, the home of Icarus, is becoming an important aviation centre. We have already described the local aerial activities in Greece by her own national air transport company (E.E.E.S.), which operates daily services from Athens to Salonica and Athens to Jannina with a fleet of four three-engined Junkers G.24 machines.

Apart from these services, the geographical position in the South-Eastern corner of Europe has led to a concentration in Greece of several important air lines serving the Near and Far East, etc. For instance, the Imperial Airways' England-India and England-Africa air routes pass through Athens via Paris and Brindisi. The K.L.M. service from Amsterdam to Dutch East Indies also calls at Athens, whilst the French Air Orient Company runs its service to Indo-China from Marseilles via Naples, Corfu, Athens, Castellorizo, etc. The Italian Aero Espresso operates two services from Brindisi, one to Istanbul, via Athens and Mytilene, and the other to Rhodes, also via Athens.

Six countries run services to Salonica, viz., Germany (Luft Hansa), from Berlin via Vienna, Budapest, Belgrade

and Sofia; France and Yugoslavia (C.I.D.N.A. and Aero-put), from Paris via Strasbourg, Nurnberg, Prague, Vienna, Budapest, Belgrade and Skoplje; Yugoslavia and Austria (Aeropot-Oelag), from Vienna via Graz, Zagreb, Belgrade and Skoplje; Poland (LOT), from Danzig via Warsaw, Lavow, Bucharest and Sofia. Finally, the Italian Societa Aerea Mediterranea operates a service to Sofia via Bari, Tyranna and Salonica.

It is thus possible, by use of these various lines, to reach Northern Europe from Greece in one day, and London on the following day.

Other aerial visitors to Greece will find the country, on the whole, well prepared aeronautically. In addition to two well-equipped and up-to-date aerodromes, with the latest night landing installations, and two seaplane bases at Phaleron and Corfu, there are eight emergency aerodromes, at all of which Shell Aviation Service can assist the visitor, while every facility and courtesy is extended to aviators both by the Greek Air Ministry and the Customs authorities. There is also a meteorological service with stations in all parts of the country, which is in constant touch with those of adjacent territories.

Foreign Air Lines in India

DURING the second quarter of the present year new rules were issued by the Indian Government concerning the carriage of mails in India by the French Cie. Air Orient and the Dutch K.L.M. Service. Previously only the carriage of mails across India to places beyond was permitted. Mails brought for delivery in India had to be handed over to the Indian postal authorities at any aerodrome which was selected by the Indian Government. Under the new rules (a) mails from the East for India and Burma may be unloaded at Rangoon, Akyab, or Calcutta; (b) outward mails for the East may be loaded on at Rangoon, Akyab, or Calcutta; (c) mails from Burma for countries outside India may be carried to Calcutta and there handed over to the Indian Postal authorities; (d) mails from Europe for India and Burma must, as before, be unloaded at Karachi; (e) mails from India to the West must not be offered for carriage. The Indian Government reserves to itself the right to withdraw these concessions at short notice.

The Perth-Adelaide Service

THE Canberra correspondent of *The Times* says that the cancellation of the subsidy for the air mail service between Perth and Adelaide when the contract expires is

expected to be part of the Commonwealth Government's air policy. It is believed that the money saved will be applied to developing the air service between Australia and Great Britain.

Malta and Civil Aviation

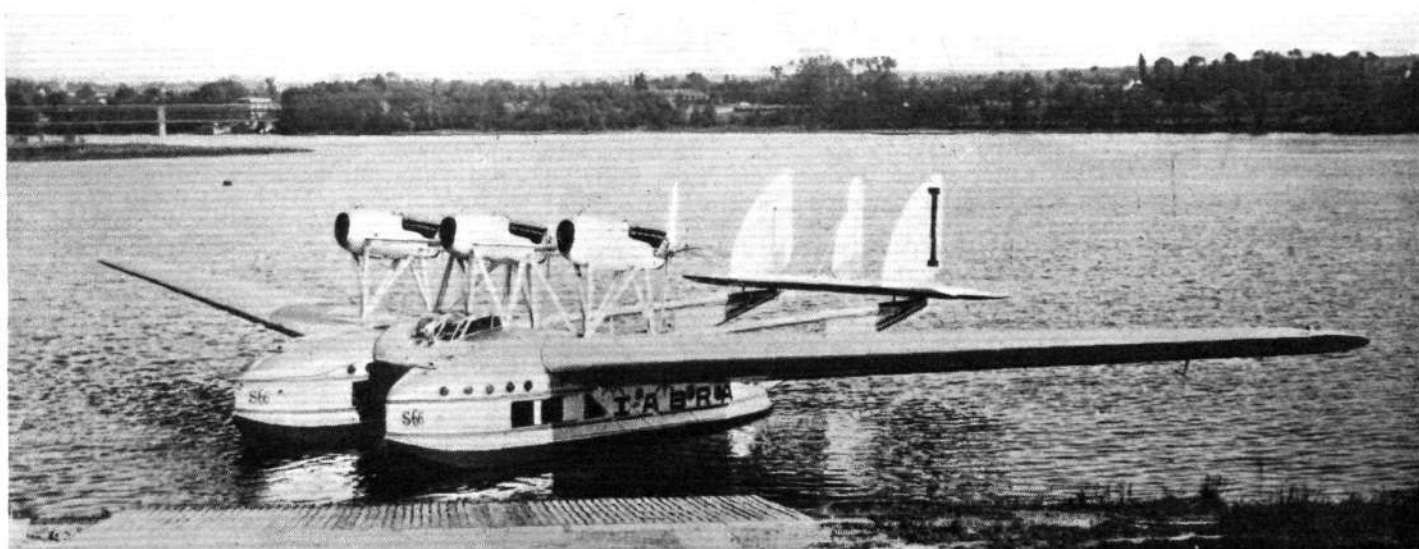
THE following is an extract from His Excellency the Governor's speech at the opening of Malta Parliament:—"Ministers will help to the best of their ability aerial services to and from Malta and will improve the existing landing and mooring facilities in that part of Marsascirocco which is being used as a civil airport and will improve the roads of approach thereto."

Aeropostale in South America

THE French Aeropostale Company has received authorisation to carry air mails from Peru to Chile, Argentina and Bolivia on the same conditions as the Panagra air lines.

"Graf Zeppelin"

THE German airship *Graf Zeppelin* arrived back at Friedrichshafen from Brazil on November 3, thus completing the ninth and last round trip this season. It is reported that Dr. Eckener will visit Batavia next January to study the possibility of starting an airship service between Amsterdam and the Dutch East Indies.



AN ITALIAN COMMERCIAL SEAPLANE: The Savoia-Marchetti S.66 twin-hull mono flying-boat. This machine, which was described in our issue for October 13 last, is a development of the S.55 type (which made the formation Atlantic flight in 1930-31) but is fitted with three 500-h.p. Fiat A.22R engines. (Photo, Shell-Mex & B.P., Ltd.)

Airport News

CROYDON

ANOTHER unexpected and surprise visit of Royalty occurred on Monday when Prince Olaf, the Crown Prince of Norway, and Princess Martha arrived on a S.A.B.E.N.A. 'plane from Brussels. They travelled incognito and were not expected, as no intimation of their departure had been received. It was only when they produced their passports to the Home Office official that their identity was revealed, and although they sat on one of the seats in the main booking hall for some time while a private car was being hired at the request of the Prince, there were very few people who knew that they had passed through the airport. The Royal visitors then drove away to Claridge's Hotel.

Two passengers, particularly notable on account of their age, left by the African Air Mail on Wednesday. One of them, who was Dame Ethel Locke King, is 70 years of age, and is especially well-known through her long association with the Brooklands racing track; she is making the journey by air to Nairobi to visit her nephew; the other, Col. Stanley Paterson, late of the Argyll and Sutherland Highlanders, and an old settler in Kenya, is 75 years of age.

On Thursday, November 3, H.R.H. Princess Ingrid of Sweden left at 9.30 a.m. in the S.A.B.E.N.A. 'plane (OO AIR), piloted by M. Lassois. She was accompanied to the aerodrome by the Earl of Athlone, who came to bid her farewell. At the airport, the Princess, who had arrived a quarter of an hour early, spent ten minutes in conversation with Maj. L. F. Richard, Chief Officer of the Aerodrome, and Mr. H. R. Joncheere, the Croydon Manager of S.A.B.E.N.A., while the Earl of Athlone chatted with Mr. Woolley Dodd, Air Superintendent of Imperial Airways.

Capt. Percival took two passengers and a quantity of luggage in his "Gull" to Paris. They left Croydon at 2.5 p.m., and in spite of a head wind of 30/35 m.p.h. arrived at Le Bourget at 3.56 p.m., thus making the journey in 1 hr. 51 min.

Mr. Kingham, a director of Gravesend Aviation, Ltd., found himself pressed for time in order to attend to business both in Gravesend and Amsterdam the same day. He solved his difficulty, however, by means of air travel. Leaving Gravesend at 8.30 a.m. he flew in a private 'plane to Croydon, where he embarked on a Royal Dutch air liner. After completing his negotiations in Amsterdam he returned by air and was back in Gravesend by 3.30 p.m.

Lord Strickland, Premier of Malta, arrived on Friday in the Air Union 'plane from Marseilles.

Fourteen taxi-cab drivers, all members of the London Taxi-Cab Drivers' League, visited the aerodrome on Satur-

day afternoon. They arrived in three taxi-cabs, each driven by members of the party. During a tour of the aerodrome they showed keen interest in the giant air liners, and later made a flight in the *City of Melbourne*, one of Imperial Airway's twin-engined Handley Page W.10's. When asked what they thought of the flight they were unanimous in their enthusiasm. The pilot, Capt. O. P. Jones, flew them over the Crystal Palace, Wimbledon, Weybridge and Epsom Downs, and before they had reached Croydon they had made up their minds to make a longer flight next time. The party was arranged to encourage members to form a flying club, and it is the intention of the League to hold a meeting shortly for this purpose. They are hoping to organise the club on similar lines to that of the 'bus drivers. A number of taxi-cab drivers were pilots during the war.

Further orders for several "Monospars" have been received this week by General Aircraft, Ltd. One "Monospar" is being prepared in a silver and red colour scheme for the Paris Aero show, and provisional arrangements are being made for practical demonstration flights at Le Bourget.

A new Hermes II sectional engine has just been completed by the Cirrus-Hermes Engineering Co., Ltd., and is to be exhibited at the Paris Aero show. It is a masterpiece of its type, and is the result of many hours of enthusiastic workmanship by the mechanics of the company, who have shown that they are masters of their craft. Every part of the engine, to the smallest screw, can be inspected. In addition to the sectional engine, two light aeroplanes fitted with Hermes II engines are also to be exhibited.

Mr. Frank Cody, a relative of Col. Cody, the pioneer airman, has joined the Cirrus-Hermes Engineering Co., Ltd., as an apprentice—he is keenly interested in aero engineering.

Purley Way, which passes the main entrance of the aerodrome and is part of the main Brighton Road, is to be more brilliantly illuminated. This is the decision of the Croydon Borough Council, who consider that the present type of electric light standards are inadequate for the amount of traffic on the road, although they were only installed a little over three years ago. The new standards, which are taller, with considerably less distance between them, are in the course of erection, and it is expected they will soon be in operation. A blaze of light will then stretch from Waddon to Purley, and should make a good land-mark for aeroplanes engaged in night flying.

The total number of passengers for the week was 1,148, freight 52 tons 11 cwt.

HORATIUS.

FROM HESTON

ON Tuesday, November 1, Mr. F. A. I. Muntz, Managing Director of Airwork, Ltd., left Heston for Heliopolis, Egypt, where he will spend some weeks in collaboration with Misr-Airwork, the associated company of Airwork, Ltd. Capt. Birkett, of Birkett Air Service, arrived from Amsterdam with two passengers and cleared Customs.

On Wednesday, November 2, Mr. Ivor McClure, head of the Aviation Department of the Automobile Association, visited Heston with Jonkheer Wittert Van Hoogland, who holds a similar position with the equivalent Association in Holland. Jonkheer Van Hoogland was greatly interested in the system in vogue at Heston, as agents for the Automobile Association, for the issue of hire maps for travel abroad and Carnets, etc. We may mention that it is hoped next year to hold a stock of maps to cover as far North as Stockholm and East to Warsaw and thence down to Constantinople. Already the school is feeling the effect of the drop in price for dual instruction to £3 3s. per flying hour—several old pupils making a re-appearance for

advanced instruction, with Capt. Baker and others putting in some extra hours solo.

On Thursday, November 3, Capt. Ferguson moved into his new quarters, and pupils will find his School of Navigation fully equipped with all necessary instruments and every comfort for their studies. We heard today that Mr. J. R. Hebert, who left Heston on October 12, arrived at the Misr-Airwork Heliopolis aerodrome on October 23.

Viscount Knebworth made an early start on Friday, November 4, clearing Customs at 6 a.m., and leaving for Valenciennes soon after in his "Moth" G-EBZG. Capt. Cazalet, with one passenger, arrived from Wexford in his "Puss Moth" G-ABDL.

On Saturday, November 5, BANCO had a charter to Catterick, with two college boys on long leave. Another new pupil joined Airwork School of Flying, having bought his own aeroplane.

Heer Schmidt Crans arrived from Rotterdam at 10.15 a.m. in "Puss Moth" PH-MAG, and left again for Rotterdam at noon with Heer Van Der Leeuw as passenger.

Château Boucon Aerodrome

A NEW aerodrome has been opened to air traffic at Château Boucon, near Nantes.

An Aerodrome for Enfield?

ENFIELD COUNCIL have instructed a sub-committee to search for a site suitable for a municipal aerodrome.

Airisms from the Four Winds

A Race to the Cape

Two attempts to better Mr. Mollison's 4 days 17 hr. 22 min. for a flight between London and Cape Town have been planned for this week. The first (which was due to start at midnight on Tuesday) by Mrs. Mollison (Miss Amy Johnson) and the second by M. Otto Thaning, the Danish Vice-Consul in Johannesburg, who recently flew from Africa to Denmark. Mrs. Mollison has sensibly stated that her flight is not a pioneer venture and she disclaims any intention of either teaching Imperial Airways their business or of claiming any special value for the flight. It is to be just a sporting attempt to reach the Cape as reasonably quickly as a "Puss Moth" can, and a flight for fun or for sport is a perfectly legitimate air gambol. Her machine is a standard "Puss Moth" called the *Desert Cloud*. It is fitted with the new "Gipsy Major" (or 111A) engine. It also has the long range fuel tanks which her husband used on his Cape flight earlier in the year. She will thus have a range of 2,000 miles or more. If she feels fit and untired she will be able to make hops of 1,500 miles or more and reach the Cape in a very few landings. Naturally and wisely she has timed the flight to take advantage of the full moon period of the month. Her route will be the West Coast or Great Circle course of about 6,200 miles, as compared with the 7,000 mile Imperial route. It is practically the same as the route used by her husband and as the one which the Fairey (Napier) long range monoplane will use. Should she improve on her husband's time it will of course be a stout effort, but any Cape flight which brings South Africa within a week of London is a good show. M. Otto Thaning arranged to start, also on a "Puss Moth," on his attempt to-day (November 10) from Copenhagen, but at the time of writing no details are to hand regarding his route.

Girl Flyers to the Cape Held Up

MISS JOAN PAGE and Miss Audrey Sale-Barker, who left Heston on October 26 in the former's "Gipsy Moth" for the Cape, are held up at Cairo. When they arrived there on November 2 their machine was slightly damaged on landing, but neither were injured, and repairs to the machine was only a matter of a few days. They are unable to proceed, however, as they have been forbidden to fly over the Soudan alone. It appears that they thought the R.A.F. would provide them with an escort, but the R.A.F. Middle East Headquarters state that such escorts cannot be provided.

And One from the Cape

MR. V. C. SMITH plans to leave the Cape in a "Moth" (Gipsy II) at midnight on November 13. Flying via Mossamedes, Pointe Noire, Duala, Gao, Adrar, Oran, and Perpignan or Bayonne, he hopes to arrive at Croydon on the 16th, thus beating the existing record held by Capt. C. D. Barnard.

Long-Distance Flight

THE Fairey (Napier) Long-Distance Monoplane piloted by Sqd. Ldr. O. R. Gayford and Flt. Lt. D. L. G. Bett will leave Cranwell aerodrome at dawn of the first day

between November 9 and 15 on which there is a suitable wind. A local westerly wind is necessary for the take-off, while a northerly wind along the route is also desired, which is a combination not often found. The route will be the same as that chosen for the intended February flight, the long crossing of the Mediterranean being avoided by a slight deviation east of the Great Circle which will take the machine over Corsica and Sardinia. The aerodrome at Tunis will be lit with the usual regulation lighting, the aerodrome at Hairwan with three lights in a triangle, while three lights in a line will be displayed on the aerodrome at Gabes, which will enable the pilots to fix their position and set a course across the wastes of the Sahara. A long-distance record is based on a great circle which, between Cranwell and Cape Town, is 6,060 statute miles, though the distance of the actual flight will be 6,198 miles. The present long-distance record is held by the Americans Boardman and Polando for their flight from New York to Constantinople on July 27-29, 1931, a distance of 5,012 miles. To reach Cape Town on the supply of fuel carried the Fairey monoplane will have to keep up an average speed of nearly 110 miles per hour.

Flying Air Yacht Off Again

MRS. J. J. JAMES, who, it will be remembered, set out from Southampton on October 11 in her Supermarine air yacht (3 Armstrong-Siddeley "Panther" engines) for a cruise around the Mediterranean and North Africa and was weatherbound at Cherbourg, resumed her trip on November 7.

The Italian Formation World Flight

It is expected that the Italian formation flight round the world will start next March or April, when 24 modified Savoia S.55 seaplanes, fitted with new 800-h.p. Isotta-Fraschini engines will leave Orbetello for New York and Tokio.

The Junkers Crash in Bavaria

THE German Ministry of Communications has issued a statement on the cause of the crash of a Junkers F.13 monoplane in Bavaria on November 2, when the pilot and wireless operator and three passengers (two of them high officials) were all killed. The case is of special interest technically, because it recalls the breaking up in the air of a Junkers F.13 over Meopham, in Kent, in July, 1930, when five persons, including Lord Dufferin, were killed. The German official statement says that the condition of the broken wing allows the cause of the accident to be cleared up beyond doubt. The pilot probably came down through clouds over the Spessart woods, it is added, in the belief that he had already passed this range, and then, finding himself in a narrow valley enclosed by wooded hills, suddenly pulled his machine up, "thus placing that abnormal stress on the structure which no aircraft can stand."

Flying in New Zealand

THE New Zealand Government has decided to purchase three aeroplanes for aero clubs and to subsidise the training of 100 club pilots.



A BELGIAN TWO-SEATER RECONNAISSANCE MONOPLANE: The Renard R.31 is fitted with a Rolls-Royce "Kestrel" engine and is credited with a speed of 335 km./h. (208 m.p.h.) at 13,000 ft.

Around Australia by Air

Mrs. Bonney's Fine Performance

THE laurels for being the first woman pilot in Australia to circle the Continent by air go to Mrs. H. B. Bonney, of Queensland, who returned to Brisbane at the end of September after an 8,000 miles flight occupying approximately a month. She flew her own Gipsy "Moth," VH-UFV, the one in which Flt. Lt. Hill made his memorable flight from England to Australia at the end of 1930. Its extra tankage made it specially suited for long-distance flights of this nature, giving it a flying range of over 8 hr., which Mrs. Bonney was glad to avail herself of on more than one occasion during the trip.

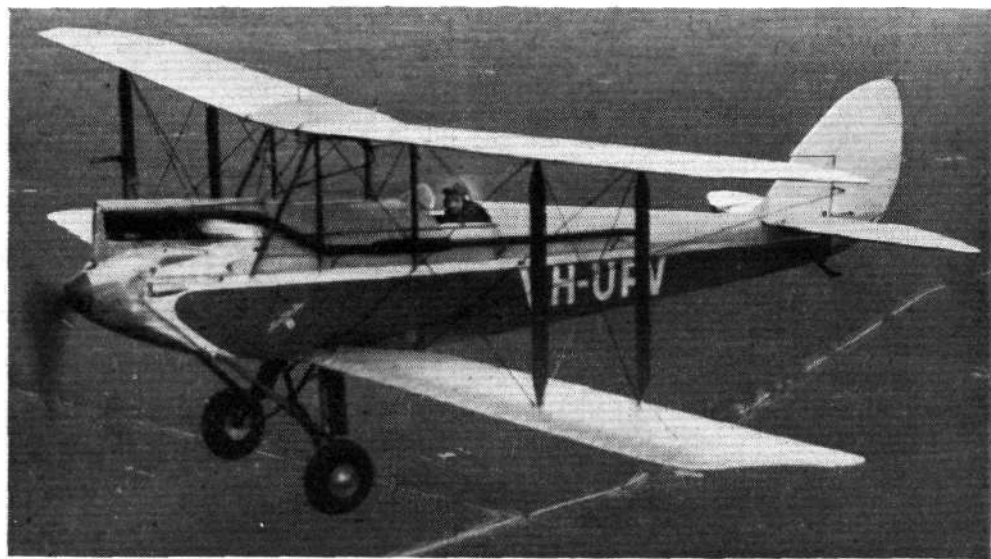
Ever since taking her "A" Ticket two years ago, Mrs. Bonney had cherished a desire to put her flying knowledge to some practical use, and at Christmas time last year she made a good beginning with an aerial visit to her parents at Wangaratta—a flight from Brisbane of nearly 1,000 miles each way, which earned her the praise of flying people in all States through which she passed.

It was the longest solo flight by an Australian woman pilot up to that time, and it was so well organised that no one was surprised to hear of her decision this spring to attempt a round-Australia flight, although it was obvious from the outset that a pilot with less than 200 hr. flying experience would, in a flight of this nature, meet with difficulties that would call for all her energies and resources.

The first stages of the flight were pleasant and uneventful. Leaving Brisbane on Monday, August 15, Mrs. Bonney reached Blackall the first night, Carnoowal the second and Darwin a day later. Over the greatest part of this section she very wisely decided to accompany the mail plane—the monotonous features of Northern Australia had led too many experienced pilots astray for her to court trouble at the beginning of the venture.

After a day's spell in Darwin, Mrs. Bonney set her course over completely new country for Wyndham, where she arrived in the afternoon of the fifth day to find an admiring gathering of local residents, for a woman pilot is still a rare sight in Wyndham. From Wyndham to Derby Mrs. Bonney struck the worst flying country of the whole trip—the treacherous Kimberley region, where for hundreds of miles a landing would have been out of the question, and where one learns to regard one's engine with a new reverence. The monotonous nature of the Kimberley's, range after range of parallel mountain ridges, made it extremely difficult to keep any sense of direction at all, so that the whole of that day's stage was flown by compass with the help of a single wrist-watch.

The greatest difficulty arose in finding the station homestead at the end of the day, and the practical manner in which Mrs. Bonney set herself to the task of picking



AROUND AUSTRALIA BY AIR: Mrs. H. B. Bonney, who flew round Australia last September, in flight over Essendon, Victoria.

it out—a single settlement in a wilderness—is typical of her resourcefulness. First, a careful calculation of flying time, speed and wind direction enabled her to tell when she might reasonably expect to look around for a sign of life, but the time came and went and still inhospitable country lay as far as the eye could see. Mrs. Bonney thereupon decided to take one distinct landmark (there happened to be a high peak in the vicinity) and to explore systematically each point of the compass from it, returning to it each time till she sighted the homestead, which she knew to be within a limited distance. It was only systematic searching that eventually found it, as it was impossible to locate it from the air without flying directly over the top. Final success was a tribute to a resourceful mind and a cool head.

From Derby Mrs. Bonney continued on her course via Port Hedland, Carnarvon, Perth, Forrest, Ceduna and Adelaide. At this point she was unfortunate enough to be held up for a week with engine adjustments to her small machine, but on their completion she made a non-stop flight to Melbourne and proceeded to Wangaratta to spend a few days with her people. The last stages of her flight were made via Canberra, Sydney and Coff's Harbour.

Everywhere Mrs. Bonney has gone she has been welcomed as good company and an excellent raconteur of her experiences in the North West. And she herself describes the experience of flying around Australia as "Enjoyable—every minute of it," meeting hospitable people in the far outback and learning for herself the varied conditions of life in distant parts of the country. As was appropriate in the matter of a pioneer flight of this nature, the Shell Company arranged supplies of Shell spirit and Aero Shell for Mrs. Bonney over the entire route and helped her in every way possible in the organisation of the trip.



Mr. E. P. Warner in England

MR. EDWARD P. WARNER, the Editor of *Aviation*, who is making a short stay in England, was entertained to luncheon by the Royal Aero Club on Friday last, Lord Gorell, the Chairman of the Club, presiding.

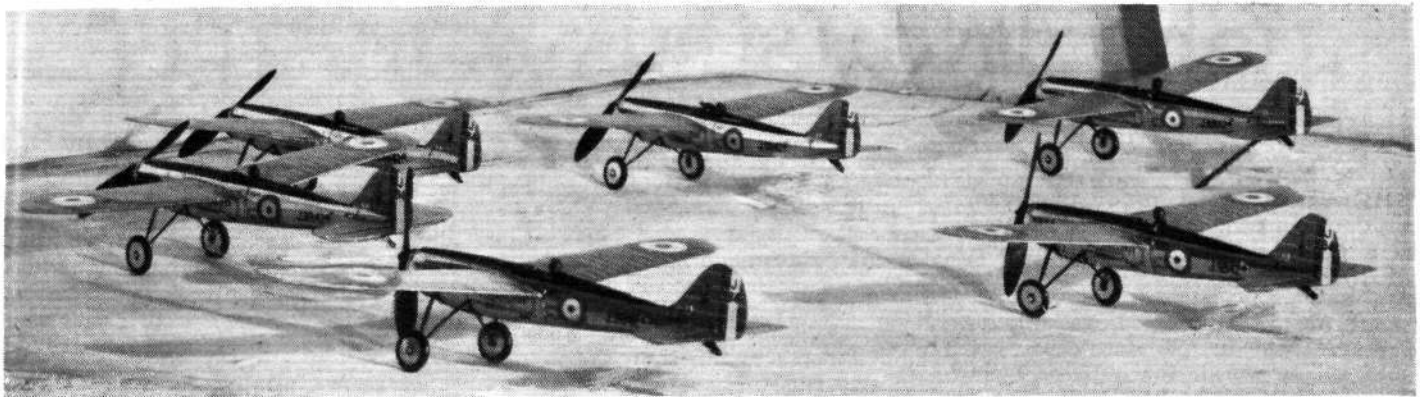
That was a Good One, That Is!

It seems that one has only just concluded a hearty laugh over the last joke in Mr. Punch's *Summer Annual*—when along comes *Punch Almanack*, and our merriment is given a fresh start. This year's selection of spasms (published on November 7 at the same modest price of one shilling) is as good as ever—although we have been able to spare the time for but a hasty glance through it.

The many coloured illustrations are, we think, even better than usual, especially "Under the Mistletoe with the Masters," by D. L. Ghilchilp, while in the text "Evoc" gives us a really excellent detective story.

De Havilland at Paris

USERS of D.H. products will be pleased to hear that the company has secured stand space at the forthcoming Paris Show. This will not be used to display aircraft, but is being arranged in a tasteful manner as a form of Information Bureau. The people in charge will be fluent not only in English but also French and German, and the company will be pleased to see any of their friends who can call there.



"FROGS" IN FORMATION: Six of the model Interceptor Fighter monoplanes described below.

ALMOST THE REAL THING

ON several occasions of late we have referred to the remarkable progress that has been made in model aeronautics during the past few years. The day of the "flying stick" has almost completely passed away, and the average model of to-day is a scientific attempt to reproduce in miniature the practice and performance of full size aircraft.

In the beginning of this attempt there were still certain departures from the full size machine, necessitated by the unavoidable limitations in model design and construction. Aeromodellists, however, have continued their efforts at solving the problems involved, with the result that flying scale models of well-known aircraft—or original designs following closely present-day practice—are now becoming a successful achievement.

A case in point—and perhaps a very interesting one on account of the large scale on which a "small scale" undertaking has been tackled—is the Wilmot model, which we describe and illustrate this week. This model, known as the "Frog IV" Interceptor Fighter monoplane, is a small $\frac{3}{8}$ -scale version of a modern machine of the type indicated, which has been—and is still being—produced in very large quantities, something over 800 a day being turned out from the remarkably well-equipped factory of International Model Aircraft, Ltd., at Merton.

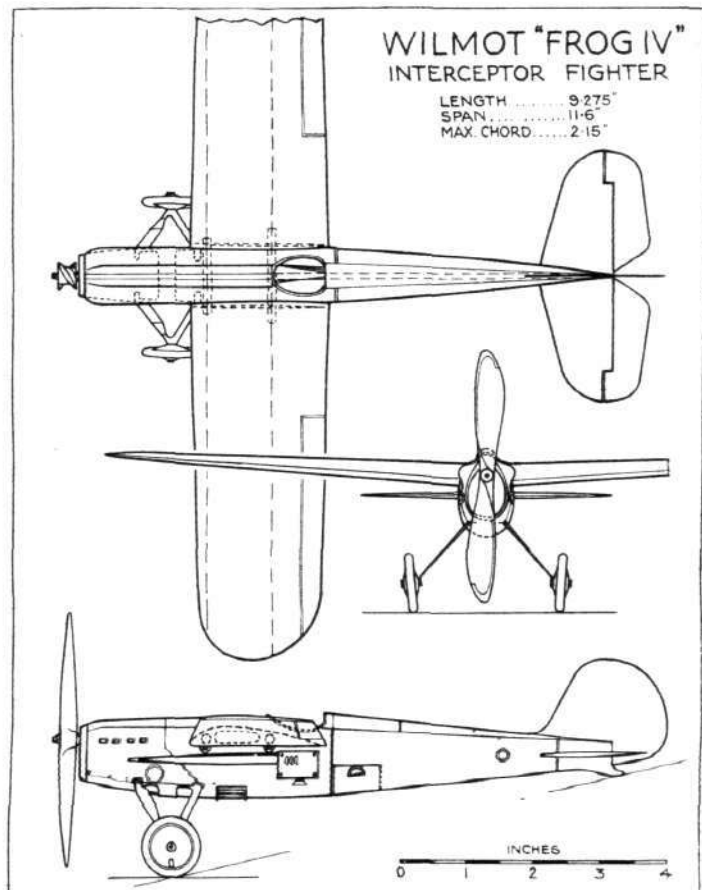
As will be seen from our illustrations, the "Frog" is extraordinarily realistic—the slightly larger airscrew being, perhaps, the only item not in true proportion to a full sized machine. Appearance, however, is not the only feature of the "Frog," for it is an excellent flyer, R.O.G. or hand-launched, indoors or outdoors.

Constructionally, this little model (it is just under 12 in. span) is a masterpiece, both as regards workmanship and ingenuity in the working of the material used—mainly a very thin, light metal alloy and paper, the fuselage being pressed out from the metal and the double surfaced wings being of specially doped paper with metal ribs.

The elastic motor, neatly housed within the fuselage, drives the tractor screw through a 3.4:1 gearing—a somewhat unusual feature in so small a model.

As sold—it is obtainable at most of the well-known stores—the model is housed in a strong box, embodied in the end of which is a geared winder, which engages with the airscrew as the model lies in its box, so that winding up the motor for a flight (the wings having previously been fixed in position, of course) is quite a simple matter.

We regret that pressure on our space this week will not allow a more detailed description of many other features of this most interesting model, and we can only conclude with a brief specification, and in saying, from personal tests, that it is in every way a sound, practical flying model and by no means a mere toy.



The principal characteristics of the "Frog IV" are:—Span, 11.6 in.; O.A. length, 9.275 in.; max. chord, 2.15 in.; area of wings, 20 sq. in.; area of tail plane and elevators, 4.27 sq. in.; area of fin, 0.763 sq. in.; area of rudder, 0.98 sq. in.; dihedral angle, $3^{\circ} 12'$; angle of incidence, $1^{\circ} 15'$; total loaded weight, 283 grns.; wing loading, 4.26 oz./sq. ft.; airscrew diameter, 3.836 in.; pitch, 4.2 in.; r.p.m., 2,800.



The Bagshot and District Model Aero Club

THE above Club was formed at a general meeting held on November 3, 15 members joining and the following officers being elected:—Hon. Secretary, Mr. F. P. Eads; Assistant Hon. Secretary, Mr. A. Sawford; Hon. Treasurer, Mr. J. C. Ghost; Judges, Messrs. A. C. Gilbert and F. E. Richardson; Committee, Messrs. F. Chapman, F. C. Parsons, A. Potter, J. V. Stanbury and W. Titcombe. The Club flying ground will be at the Queen Victoria Memorial, Chobham Common. The clubroom is at The

King's Arms Hotel, Bagshot. It was decided to apply to the S.M.A.E. for affiliation. A competition to establish a club duration record will be held on Sunday, December 11, on the Club ground, at 2.30 p.m. The competition is open to any type of machine and will be divided into two classes: (1) Hand launched; (2) R.O.G. The next indoor meeting will be held in the clubroom on Thursday, December 1, at 8 p.m. All communications to the Hon. Secretary, "Brookleigh," High Street, Bagshot, Surrey. Phone: Bagshot 30.

The Industry

STORY OF M.G. CARS

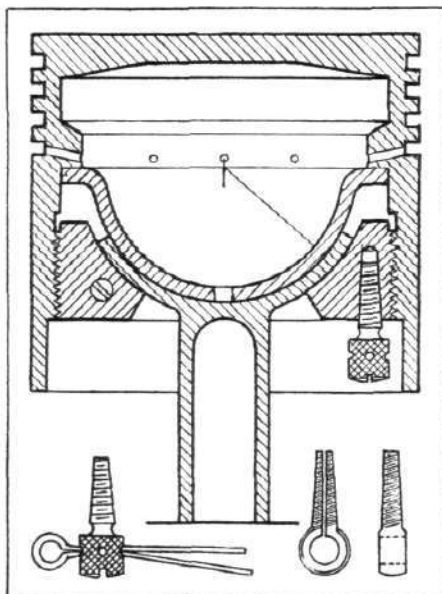
THE varied literature of the M.G. Car Co., Ltd., has been augmented by a publication from Abingdon, entitled a "Chequered Career." It has been produced mainly to serve as a record of the M.G. "Midget's" remarkable rise in popularity in the motor-racing world, the authors being Mr. H. S. Linfield and Mr. E. C. Lester, of *The Autocar*. Readers of this booklet are given an extremely interesting account, with illustrations, of the development of these cars and the successes they have achieved on the racing track. The latest news bulletin from the company informs us that the factory at Abingdon is still handling its maximum output of cars, and for the week ending October 12 more cars were actually produced and delivered than ever before in the history of the company, the output being approximately five times higher than for the corresponding week last year.

It is also interesting to note that R. T. Horton's winning M.G. "Midget" covered the first standing lap in the 500 miles race at Brooklands recently at 80.33 m.p.h., and later in the race, 24 consecutive laps, not one of which was timed at less than 107.11 m.p.h. The fastest four laps were covered at 108.27 m.p.h. and 128 laps out of 181 at over 100 m.p.h. Surely a phenomenal performance for a 746-c.c. engine. When are the makers going to give us a light cheap aero engine based on this one?

THE "DOCK" PATENT PISTON

A NEW step in the development of aircraft engines which is being considered by some of the leading manufacturers in this country is a piston without a gudgeon pin. It is the invention of Mr. Herman Dock, an American, residing in Guadalajara, Mexico. The "Dock" piston, as it is called, being named after its inventor, is calculated to save considerable weight and space in the future design of engines, this fact alone making it of the utmost importance to aviation, particularly the commercial side. It consists of a simple turning into which is placed a brass cap hemispherical in form, and the small end of the connecting rod is hollowed out and fits over the brass cap, thus making a perfect bearing. A locking ring which is in two pieces is then screwed up into the piston, and this is held firm by a small tapered screw (see illustration). The new piston has concentric surfaces on both the interior wall and its outer face, and there is no gudgeon pin to provide for and fit; also it is only about three-quarters of the depth of the ordinary piston, therefore less metal is required both in the piston wall and its cylinder head. The new piston should probably cost less to produce than the ordinary type of piston. The possible reduction in the amount of metal in the piston head is due to the fact that the interior wall of the piston

is unbroken by abutments, thick sections, or bosses for carrying a gudgeon pin. It can be made much shallower than the ordinary type, and it is definitely very much lighter even when the length of the piston is not altered. The "Dock" piston has no gudgeon pin to wear out or score the walls of the cylinder, and this source of premature wear is entirely eliminated. Owing to its concentric form, distortion and consequent wear when heated up is avoided. Further, as the bearing within the piston is hemispherical in form, the actual bearing surface is greater than that of the crank pin and is about three times as great as the bearing surface on the standard form of gudgeon pin, with the result that the life of the piston and its bearing is very considerably prolonged.



The "Dock" Piston.

Moreover, as the piston revolves when working in the cylinder, uneven wear on the piston and cylinder walls is reduced in proportion. No fine adjustments are necessary with this new piston, as a universal movement of the connecting rod is provided for, instead of the restricted oscillating movement in one plane, with the gudgeon pin type of bearing; therefore, no exact alignment is required between the crankshaft and the cylinders. In other words, the new bearing is automatically self-adjusting and any wear taking place is concentric. We understand that Maj. P. A. Smith, O.B.E., of Drake & Gorham, Ltd., 36, Grosvenor Gardens, S.W.1, has the rights of development for this piston in Great Britain.

AN APPOINTMENT

MR. ROBERT L. CARTER, A.R.Ae.S., has been appointed sales representative for the Premier Aluminium Casting Co., Ltd., Birmingham, who specialise in Aluminium Alloy castings for the aircraft and

automobile industries, particularly heavy castings such as crankcases and gear boxes, etc. Mr. Carter, who will conduct his business from 7, Duppas Road, Croydon, is open for appointment in a similar capacity with a limited number of non-competitive interests serving the aircraft market. He has connections in various countries, and offers a service for anyone requiring technical or commercial information, particularly relating to the light engineering industry. He is specially familiar with the American market, and also welcomes trade matter relating to commercial metals such as Tantalum and Magnesium, etc., for re-forwarding. His experience has embraced design work with Leyland Motors, Ltd., James Walmsley & Co. (Preston), Ltd. (on the development of the Bradshaw oil-cooled engine), English Electric Co., Ltd., Aircraft Works, and the Supermarine Aviation Works, Ltd. His commercial work in publicity, advertising and sales has been obtained with Imperial Airways, Ltd., and the Ford Motor Co., Ltd. (aircraft department).

ELEKTRON

THE following letter received from James Booth & Co. (1915), Ltd., of Argyle Street Works, Nechells, Birmingham, gives more detail about Elektron than was contained in the brief facts that we gave in our article on "Aircraft Cabin Furnishing" published in FLIGHT, October 6 last:—

"There appear to be two mis-statements in this article, the first with respect to the composition of Elektron, and the second with regard to its mechanical properties. The Elektron used for the well-known tubular construction of aircraft furniture is of the alloy 'AZM' which has the following approximate composition:—

Magnesium	...	92.5 per cent.
Aluminium	...	6.0 " "
Zinc	...	1.0 " "
Manganese	...	0.5 " "

The mechanical properties of AZM tubes of the size used in the tubular construction referred to can be judged from the following test figures taken at random from our records of tests on these sizes:—

1% Proof Stress Tons Sq. Inch.	Maximum Stress Tons Sq. Inch.	Elong. %
12.4	20.8	10
16.2	21.92	10
15.8	19.35	11
12.9	19.3	10
14.2	20.65	12

If you will be good enough to compare these figures with those quoted in the article referred to above you will see that the published figures are by comparison most unfavourable to the material, and we should be greatly obliged if you would be good enough to correct this impression."

THE D.H. "FOX MOTH"

IN FLIGHT for September 30, in the Industry Section, a description was given of a new booklet describing the D.H. "Fox Moth." Applications for this book should be made direct to the de Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware.

THE ROYAL AIR FORCE

London Gazette, November 1, 1932.

General Duties Branch

The following Pilot Officers are promoted to rank of Flying Officer:—P. A. de G. Tettenborn (Sept. 13); A. W. M. Finny, S. E. R. Shepard (Oct. 10); M. D. C. Biggie, W. L. Houlbrook (Oct. 13).

Flt. Lt. J. L. Kirby is placed on half-pay list, Scale B, from Nov. 1 to Nov. 6, inclusive; Flt. Lt. C. T. Johnson is placed on retired list (Nov. 2).

Stores Branch

Flt. Lt. C. J. Polden is placed on retired list (Nov. 1).

Medical Branch

Flt. Lt. J. G. Russell, M.B., B.Ch., is promoted to rank of Squadron Leader (Oct. 30); Flying Officer R. N. Kinnison, M.B., Ch.B. (Lt., T.A.R. of O.), is promoted to rank of Flt. Lt. (Oct. 28).

Memorandum

No. 179908 Flight Cadet A. E. Pearson is granted an honorary commn. as Sec.-Lt. with effect from date of demobilization.

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE

Staff Nurse Miss N. L. Featherby is promoted to rank of Sister (Sept. 25); Sister Miss E. A. Nunn is placed on retired list on account of ill-health (Nov. 1); Staff Nurse Miss E. Gibson resigns her appointment (Oct. 31).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Air Commodore: P. H. L. Playfair, C.B., M.C., to No. 23 Group H.Q., Grantham, 31.10.32, to Command vice A/Cdr. P. F. M. Fellowes, D.S.O.

Squadron Leader F. J. Vincent, D.F.C., to No. 17 (F) Sqdn., Upavon, 25.10.32, to command vice F/Lt. B. B. Caswell.

Flight Lieutenants: D. L. Blackford, to No. 23 (F) Sqdn., Biggin Hill, 18.10.32. E. M. Drummond, to No. 12 (B) Sqdn., Andover, 24.10.32. J. M. J. C. J. I. Rock de Besombes, to H.Q., R.A.F., Mediterranean, Malta, 28.10.32. L. E. M. Gillman, to R.A.F. Base, Calshot, 28.10.32. J. R. Jones, to No. 5 (A.C.) Sqdn., Quetta, 6.10.32.

Flying Officers: R. M. Noblston, to No. 207 (B) Sqdn., Bircham Newton, 17.10.32. W. H. Hutton, to No. 99 (B) Sqdn., Upper Heyford, 17.10.32. C. J. Farrell, to No. 12 (B) Sqdn., Andover, 20.10.32. H. A. V. Hogan, to R.A.F. Base, Gosport, 24.10.32. B. M. Cary, to No. 28 (A.C.) Sqdn., Ambala, India, 7.10.32. D. W. H. Heath to Home Aircraft Depot, Henlow, 1.11.32.

Stores Branch

Group Captain: L. Anker, O.B.E., to No. 1 Stores Depot, Kidbrooke, 1.11.32, to Command.



The Royal Air Force Memorial Fund.

THE usual meeting of the Grants Committee of the Fund was held at Idlesleigh House, on October 27. Mr. W. S. Field was in the Chair, and the other members of the Committee present were:—Mrs. L. M. K. Pratt Barlow, O.B.E., Air Commodore B. C. H. Drew, C.M.G., Mrs. F. Vesey Holt, Squadron Leader H. G. W. Lock, D.F.C., A.F.C. The Committee considered in all 17 cases, and made grants to the amount of £356 4s.

H.M.S. Engadine Reunion.

THE Fourteenth Annual Reunion of the wartime ship's company of H.M.S. Engadine will be held at the Adelphi Hotel, John Street, Strand, on Saturday, November 12, at 6.30 p.m. Details from Arthur B. Ward, 135, Burbage Road, London, S.E.21.

No. 25 (Fighter) Sq., Royal Air Force, Reunion Dinner.

No. 25 (Fighter) Squadron's Reunion Dinner for all past and present Officers of the Squadron is to be held at the Mayfair Hotel, London, on



Foreign Decoration

THE King has granted Royal licence and authority to the following to wear the decoration that has been conferred on him:—Sqd. Ldr. Alan FitzRoy Somerset-Leeke, O.B.E., Royal Air Force, the Cross of Officer of the Order of the Redeemer, conferred by the President of the Hellenic Republic, in recognition of services as a member of the British Air Mission to Greece.

Catapults on Warships

H.M.S. Ark Royal is proceeding to Malta carrying catapults for the cruisers London, Devonshire and Sussex, which will be installed in the Malta dockyard. Fourteen ships of the Royal Navy carry aircraft catapults, H.M.S. Exeter carrying two.

A Loss to Gliding

WE regret to record the death of Mr. Basil Lowe, at the early age of 24. Mr. Basil Lowe was a brother of Mr. C. H. Lowe-Wylde, and has been closely connected for the last two years with the B.A.C. firm at Maidstone. The passing of Mr. Lowe was brought about by an unfortunate accident while motor-cycling on Thursday last, from which he received a fractured skull. He was taken to Eltham Cottage Hospital, where he passed away last Sunday morning.

A Proposed Aircraft Centre

A LARGE and particularly well appointed building at

ROYAL AIR FORCE RESERVE. RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flying Officer on probation L. C. L. Murray is confirmed in rank (June 30). The following are transferred from Class A to Class C:—Flt. Lt. R. N. Riddell (Oct. 2); F./O. W. Dougall (Sept. 3); F./O. G. F. Court (Sept. 20); F./O. G. A. Ogg (Oct. 18).

F./O. M. J. Cresswell is transferred from Class AA (ii) to Class C (Oct. 17). Flt. Lt. C. B. Wilson relinquishes his commn. on completion of service (Sept. 18); F./O. J. F. Young relinquishes his commn. on completion of service (Nov. 1); Flt. Lt. E. C. W. Fitzherbert, M.B.E., D.S.C., relinquishes his commn. on completion of service and is permitted to retain his rank (Oct. 24).

SPECIAL RESERVE

General Duties Branch

The following Pilot Officers on probation are confirmed in rank:—R. H. B. Grattan (Aug. 18); T. R. Leatherdale (Sept. 17); D. R. P. Mills (Sept. 17).

Accountant Branch

Flight Lieutenant B. G. Drake, to H.Q. R.A.F., Cranwell, 25.10.32.
Flying Officer R. Trippett, to Station H.Q., Netheravon, 25.10.32.

Medical Branch

Group Captain: B. A. Playne, D.S.O., to H.Q., Iraq Command, Hinaidi, 30.10.32, for duty as Principal Med. Officer, vice G/Capt. W. Tyrrell, D.S.O. M.C.

Flying Officers C. H. Smith, to Palestine General Hospital, 13.10.32. C. A. Rumball, to R.A.F. Depot, Middle East, Aboukir, 13.10.32.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:—

Lieuts. (F/O., R.A.F.).—E. H. Shattock, reattached to R.A.F. (Oct. 31), and to Victory, for R.A.F. Base, Gosport, for course, and to Sussex, and for 447 Flight. J. A. L. Drummond, to Victory, for R.A.F. Base, Gosport, and for 409 Flight (Nov. 3).

Sub-Lieut.—I. R. Sarel (F/O., R.A.F.), to Victory, for R.A.F. Base, Gosport, and for 409 Flight (Nov. 3).

Friday, 6.11.33. All Officers past and present who wish to attend can obtain particulars on application to Flight Lieutenant F. J. S. Short, No. 25 (Fighter) Squadron, Royal Air Force, Hawkinge, Kent. Cheques for 15s. made payable to the Hon. Secretary, No. 25 (Fighter) Squadron's Reunion Dinner Fund should accompany applications.

No. 3 Squadron, R.F.C., and No. 3 (F) Squadron, Royal Air Force Annual Reunion Dinner.

THE Annual Officers' Reunion Dinner of No. 3 Squadron will take place on Friday, December 2, at The Royal Air Force Club, at 7.30 p.m. Tickets will be 12s. 6d. each, exclusive of wines, and may be had on application to the Hon. Secretary. Owing to overseas postings and changes of address it has been impossible to send notices of the dinner to all members. Will any ex-member of the Squadron who has not received a notice, please communicate with the Hon. Secretary, Flight Lieutenant John Oliver, A.F.C., No. 3 (F) Squadron, Royal Air Force, Upavon, near Marlborough, Wilts.

No. 7, Park Lane, is being converted into office suites which will be let, only to those firms or organisations who are definitely connected with the aircraft trade. The idea is that customers of the aircraft trade, and particularly those from abroad, will thereby far better be able to get in touch with all the necessary firms in the shortest space of time. The building itself is admirable for the purpose, and although the flats which hitherto have comprised its interior are now being altered, yet the impressive dignity and luxurious fitting of the building will be retained in every respect. The alterations will permit of either small units or large self-contained suites of offices being rented. Perhaps the most important point of the scheme is that, despite the excellent position of the building, it has been found possible to offer the accommodation at rents below those asked for accommodation in secondary positions. The idea of gathering together the London representatives of all the main aircraft engine and accessory firms as well as the main organisations formed for their joint welfare, is undoubtedly an excellent one, and, moreover, one which should prove to be the means of promoting better business by virtue of closer co-operation. An added advantage of the position is its proximity to the Royal Aero Club and Royal Air Force Club. Firms who are interested in securing accommodation in this building should communicate with the agents, Way & Waller, 7, Hanover Square, W.1 (Mayfair 8022).

Book Reviews

"*The Air Annual of the British Empire, 1932-33.*" Edited by Sqd. Ldr. C. G. Burge. (Gale & Polden.) Obtainable from FLIGHT Office. Price 21s. 9d., post free.

SQD. LDR. C. G. BURGE has once again produced an admirable summing up of the work of British aviation during the current year. Published by Messrs. Gale & Polden, the volume is well set out, and the illustrations (most of which are reproduced from FLIGHT) are beautifully clear.

Concise divided into sections dealing with every departure of aviation, the volume serves the dual purpose of an excellent book of reference and a history of aviation during the year 1932. It does, however, seem a little strange that, out of just over 700 pages, only 20 are devoted to a review of the Royal Air Force; a great deal of useful work, not necessarily of a belligerent nature, is done by the Service, more especially abroad, about which the public know little, and what better place could be found in which to exploit the usefulness of a fighting force in times of peace?

It is interesting to note that 70 per cent. of the illustrations are of machines designed for Service use, which but proves, what is emphasised elsewhere in the book, that the growth of civilian aircraft is, in comparison, slow, though it may be sure.

The surprising improvements, both in reliability and performance, that have been made in the design and construction of aero engines are emphasised in the section dealing with that subject. The latest improvements in photographic equipment, wheels, brakes, floats, undercarriages, hangar construction and electrical components are also explained at length. To those who are inclined to believe that the national conservatism of the British race retards advancement we strongly recommend this work.

"*Historie de L'Aeronautique.*" By Charles Dollfus and Henri Bouché. (Published by L'Illustration, Paris.)

THE history of aeronautics is a subject that has been tackled by several authors, and in many cases their efforts have achieved an individual success, in so far as some particular phase of the subject is concerned. Few, if any, however, have, in the writer's opinion, been a success when considered as a complete history of aeronautics in all its aspects—an achievement that we admit would be difficult, if not impossible, to attain. For it must be remembered that material, accurate and reliable, to produce such results is most difficult to collect, and then when and if it is collected preparing it in a presentable form for our history is again a formidable piece of work.

Bearing this in mind, we have found it a pleasant task indeed to peruse the 572 pages (11 in. x 15 in.) of *L'Histoire de L'Aéronautique*, by Charles Dollfus and Henri Bouché. In the first place, we have only to say that it has been published by the famous House of L'Illustration, of Paris, to convey at once that the production—printing and binding—is perfect and a treat for the eyes.

Secondly, the "material" collected is the most comprehensive record of the more important happenings, past and present, in all the phases of aeronautics that we have so far seen.

Thirdly, this has been presented in a form that unfurls the development and progress of man's effort to conquer the air from earliest known records to the present day, concisely and step by step. It therefore not only provides most fascinating reading, but we also have an exceptionally complete record of immense value for reference purposes.

The first chapter of this book, of course, deals with the early legendary attempts at flight, Leonardo da Vinci's design, the early balloons, etc., up to 1800, which chapter includes many reproductions, some in colour, of old prints and engravings, and some detailed drawings of Meusnier's dirigible. Then we come to the first practical efforts in aerial navigation from 1800 to 1900, one item of special interest in which chapter is a reproduction of a page from *L'Illustration* of April 8, 1843, showing details of Henson's

Aerial Steam Carriage. Included amongst others in this chapter also are, of course, the efforts of such pioneers as Pénard, Tatin, Tissander, Renard, Ader, Lilienthal, Hargrave, Langley, Chanute, Zeppelin, and Santos Dumont.

Chapter III, covering the period 1900-14, deals with the actual conquest of the air by man, and we are told of the further progress made by Santos Dumont, Zeppelin, etc., and of the first real practical successes of the heavier-than-air machines achieved by the Wright Bros., Voisin, Ferber, Farman, and Blériot. Thence we are taken stage by stage through the rapid progress, in design and events, up to the outbreak of the Great War.

The next chapter tells of the work done by aircraft during the War, and is very interesting indeed. We feel, however, that here we have the one criticism to make, and that is, we are somewhat disappointed in not seeing a little more devoted (in illustrations) to the different types of machines used during this period. A complete collection of war-type aircraft of 1914-18 has yet to be compiled, and is, we think, a much-wanted addition to aeronautical literature.

"Aeronautics of To-day" forms the subject of the last chapter, and this, like the previous ones, is exceptionally comprehensive—very few types of aircraft or flying events having been left out. All the Big Flights—Atlantic, Polar, etc.—are recorded, and some remarkable photographs are reproduced. Commercial aeronautics is fully dealt with, even to a coloured plate showing a selection of Air Mail postage stamps in facsimile—so real that one can almost "pick them off" the page!

Finally, there is a really useful index—a feature not always to be found in works of this kind!

Ground Engineers' Examinations

EXAMINATION Boards will sit for the purpose of examining applicants for ground engineers' licences at LONDON on November 16, 23 and 30; December 7, 14, 21, 28; January 4, 11, 18, 25; February 1, 8, 15, 22; March 1, 8, 15, 22, 29. At CROYDON on November 11, December 9, January 13, February 10 and March 10. At MANCHESTER on February 3 and Bristol on January 6. Applications for the requisite forms should be made to the Secretary of the Air Ministry (C.A.2), Adastral House, Kingsway, W.C.2.

PUBLICATIONS RECEIVED

Lloyd's Register of Shipping. Report of the Society's Operations during the Year 1931-1932. Lloyd's Register of Shipping, 71, Fenchurch Street, E.C.3.
Aeronautical Research Committee Reports and Memoranda: No. 1466. *Velocity Distribution in the Neighbourhood of a Corrugated Sheet.* By R. Houghton. April, 1932. Price 6d. net. No. 1472. *Measurement of Position Error on High Speed Aircraft.* By R. K. Cushing. April, 1932. Price 6d. net. No. 1487. *Effect of Float Setting on Take-Off and Top Speed of the III F.* By J. L. Hutchinson. December, 1930. Price 3d. net. London: H.M. Stationery Office, W.C.2.

British Patents and Designs Statutes as Amended and Consolidated to 1932. With Introduction and Index by H. J. W. Bliss. B.A. (Oxon.). London: Stevens & Sons, Ltd. Price 4s. 6d. net.

Madness Opens the Door. By C. F. Caunter. London: Thornton Butterworth, Ltd. Price 7s. 6d. net.

High Speed and Other Flights. By Flt. Lt. H. M. Schofield. London: John Hamilton, Ltd. Price 15s. net.

Fighting Planes and Aces. By F. O. W. E. Johns. London: John Hamilton, Ltd. Price 5s. net.

NEW COMPANY REGISTERED

BIRKETT AIR SERVICES, LTD., 4, Bloomsbury Place, W.C.1. Capital: £2,000 in £1 shares. Manufacturers of and dealers in aeroplanes and all forms of aircraft, etc. Directors: G. Birkett, Pine Ridge, Old Hall Drive, Hatch End, Middlesex, aviator; H. C. Conlin, 34, Russell Gardens, Golders Green, salesman. P. J. Conlin, 34, Russell Gardens, Golders Green, salesman.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published November 17, 1932

- 20,861. F. MELCHER. Counter-running double or multiple propellers. (382,297.)
- 20,980. T. G. NYBORG. Aeroplane wings. (382,302.)
- 22,717. GES. FÜR ELEKTRISCHE APPARATE. Gyroscopic pendulums for finding gravitational direction or horizon. (382,343.)
- 25,382. J. DE LA CIERVA. Aircraft having rotative sustaining means. (382,371.)
- 28,120. ECLIPSE AVIATION CORPORATION. Engine-starting apparatus. (382,405.)

APPLIED FOR IN 1932

Published November 3, 1932

- 11,180. CIERVA AUTOGIRO CO., LTD. Aircraft having rotative sustaining means. (381,869.)